

REPORT NO. ER 5473

DATED February 11, 1966

LOCKHEED-GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

MARIETTA

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ACCESSION FOR	
W. H. SECTION	<input checked="" type="checkbox"/>
ENGINEERING	<input type="checkbox"/>
DESIGN	<input type="checkbox"/>
TESTING	<input type="checkbox"/>
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DISTRIBUTION/AVAILABILITY CODES	
DIST.	AVAIL. and or SPECIAL

TITLE

C-141A ENGINEERING FLIGHT TEST RESULTS
OF THE AERIAL DELIVERY SYSTEM TESTS

SUBMITTED UNDER

MODEL C-141A

REFERENCE

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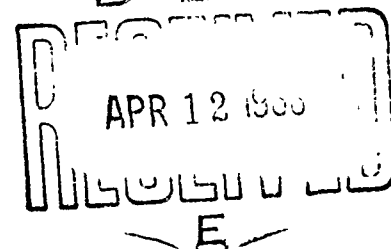
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ABSTRACT

Aerial delivery systems tests were accomplished with the C-141A, AF63-8077 (LAC 6108), at the Naval Air Facility, El Centro, California. These tests consisted of personnel delivery drops (dummy drops), extraction line length tests, extraction parachute tow tests, single package cargo drops, and multiple package cargo drops. Qualitative evaluations, airplane response parameters, and airplane loads obtained during these tests are contained in this report.

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SUMMARY

Aerial Delivery System Tests were accomplished in accordance with the requirements of Reference (1) with the C-141A, AF63-8077 (LAC 6008), at the Naval Air Facility, El Centro, California, from 22 February 1965 to 4 October 1965. Personnel delivery capabilities, extraction system capabilities, and airplane capabilities were within the scope of the test program. Airplane response parameters, and airplane flight loads measured during these tests are contained in this report.

Personnel delivery capabilities were demonstrated up to 200 KCAS for the simultaneous exit from the cargo ramp with the paratroop doors closed. Simultaneous exit from the paratroop doors and cargo ramp was demonstrated to be not feasible. Dummy retrievals were demonstrated at 130 KCAS from the paratroop doors only, and from the cargo ramp only. The dummy retrieval tests from the cargo ramp indicated a live subject would have been seriously injured, and further evaluation utilizing various pilot techniques, configuration changes, and retrieval devices is recommended.

Extraction system capabilities were shown to be deficient during the test program. The 15'D₀ and the 22'D₀ standard ring slot extraction parachutes were demonstrated to be satisfactory up to 150 KCAS. However, the test results indicated that the 28'D₀ standard ring slot extraction parachute was not safe for use above 140 KCAS. This resulted

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in a maximum drop weight restriction of 16,000 pounds over the maximum speed range (130 KCAS to 150 KCAS). Drop weights up to 25,000 pounds could be considered at 140 KCAS employing the 28'D₀ extraction parachute. The non-standard 32'D₀ first ribbon and 24'D₀ reinforced ring slot extraction parachutes were the only parachutes demonstrated to have capabilities in the 150 KCAS to 200 KCAS speed range. In addition, the present ADS modular platform was shown to be inadequate for airdropping unit loads above 25,000 pounds from the C-141A. The minimum extraction line length indicated by test results was that length which placed the connection between the extraction line and the extraction parachute risers at least 33.5' aft of the tail cone. A 140' extraction line was demonstrated to be satisfactory for use with loads located at any position in the cargo compartment.

Complete airplane capability was demonstrated to airdrop unit loads up to 25,000 pounds at speeds up to 200 KCAS, and to airdrop unit loads of 35,000 pounds at speeds up to 160 KCAS. For 35,000 pound unit loads, platform damage and possibly roller damage can be expected for extraction rates below approximately 0.8g. Complete airplane capability was also demonstrated to airdrop, sequentially at 150 KCAS, a maximum of seven loads weighing up to 71,100 pounds. Test results indicate the C-141A has capabilities to airdrop unit loads in excess of 35,000

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pounds contingent upon the availability of a suitable platform and an extraction system of high reliability. The ARRAV tank mock up was successfully airdropped without any contact between it and adjacent airplane structure. Airplane response experienced during the cargo airdrops was within allowable limits. However, under the influence of reduced extraction rates, airplane response increases greatly and in some instances of extraction system failures, full down elevator was required to check the airplane pitching motion. These extraction system failures dictated the need for an extraction system of high reliability for use with 35,000 pound class unit loads. With the petal doors in the "no strake" configuration, all measured flight loads were below allowable limits with the exception of vertical acceleration @ FS 932 which reached 2.1g during drop number 40R. With the 13.5' strake installed, the petal door actuator loads exceeded design limits in compression on several low extraction rate drops, while the remainder of the measured airplane flight loads remained below allowable limits.

Petal door load survey tests demonstrated that complete removal of the petal door strake was necessary to allow for incremental petal door loads during airdrops. With the strake removed, a more closed position of the petal doors was available (from 60° to 55°). In addition, the proposed ramp air deflectors were shown to aggravate the most critical petal door loads in sideslip, and provide no significant change in passage loads during airdrops. Strake removal introduced a minor problem in that design limit loads in tension for the 38° door position were exceeded in maximum steady

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sideslip for flap deflections greater than 50% and airspeeds above approximately 180 KCAS. However, during the Aerial Delivery System Tests it became apparent that the 38° door position was of limited usefulness, and unless a three stick paratroop airdrop capability was developed, the intermediate door position would not be used. Therefore, no further tests were accomplished for the 38° door position.

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References

- (1) Lockheed Engineering Report, ER 5453, "Engineering Flight Test Detailed Program: Volume III - Systems", revised 11-6-64.
- (2) Lockheed Engineering Report, ER/S 6100, "Detail Specifications", revised 2-1-65.
- (3) Lockheed Engineering Report, ER 5053, "Structural Design Criteria", revised 4-20-64.
- (4) Lockheed Engineering Report, ER 5264, "C-141A Aircraft Cargo Handling And Aerial Delivery Subsystems".

1.0 INTRODUCTION

In accordance with the contractual requirements of Reference (1), one hundred thirty-three aerial delivery system tests were accomplished with the C-141A at the Naval Air Facility, El Centro, California.

Twenty-five dummy drops were performed at airspeeds ranging from 120 KCAS to 200 KCAS and pressure altitudes from 2500 to 5000 feet. Single dummies and sticks of up to seven dummies were dropped from the paratroop doors and off the ramp. In addition, simultaneous exit from the paratroop doors and ramp was tested. A summary of these tests is contained in Appendix A, Table A-1, and a qualitative evaluation of the results is available in Section 4.1 of this document.

Eight dummy parachute pack ejection tests were performed at airspeeds from 120 KCAS to 192 KCAS. These tests are summarized in Table 4-1, and a discussion of the results is contained in Section 4.2 of this report.

Seventeen extraction line length tests were accomplished at airspeeds from 120 KCAS to 200 KCAS. Line lengths of 60, 80,



105, and 145 feet were employed. These tests are summarized in Table 4-2, and the results discussed in Section 4.2 of this report.

Thirty-six extraction parachute tow tests were accomplished ranging in airspeed from 118 KCAS to 204 KCAS and in pressure altitude from 1600 to 5000 feet. Standard ring slot parachutes of 15, 22, and 28'D₀ were tested. Non-standard parachutes employed during testing were a 32'D₀ fist ribbon parachute, and a 24'D₀ reinforced ring slot parachute. With the exception of the 28'D₀ ring slot parachute, all parachutes were tested in the reefed and unreefed configurations. Testing of clusters of 2 parachutes was accomplished for each parachute size with the exception of the 24'D₀ reinforced ring slot parachute. The tow tests are summarized in Table A-2 in Appendix A. Applicable time history data for the tow tests are also presented in Appendix C. A discussion of the test results is contained in Section 4.2 of this report.

Thirty-nine single package cargo drops were performed ranging in weight from 2,640 to 35,700 pounds. Airspeeds from 120 KCAS to 200 KCAS and pressure altitudes from 2500 to 20,000 feet were investigated. Airplane gross weights from 166,000 to 276,000 pounds, along with c.g. positions from 33.8% MAC to 18.7% MAC

and flap positions from 0 to 90° were tested. Peak extraction ratios encountered varied between 1.66g and 0.32g. Eight multiple package cargo drops ranging in total weight from 40,180 to 71,000 pounds were also accomplished. The cargo airdrops are summarized in Table A-3 in Appendix A. Time history data depicting airplane response and loads are presented in Appendix D and Appendix F. A discussion of the results is presented in Sections 4.3 and 4.4 of this report.

High petal door passage loads were experienced during the cargo airdrops and precipitated the need for a petal door airload survey in various configurations. The results of this survey are discussed in Section 4.3 of this report, and applicable tabular data are included in Appendix E.

Modular platform under surface damage and extraction system reliability for heavy cargos (25, to 35,000 pound range) became problem areas during the course of testing. These problem areas resulted in a temporary weight restriction of 25,000 pounds for a parachute extracted cargo airdrop. A discussion of these problem areas is presented in Section 4.3.1.2 and Section 4.5.1 of this report.

2.0 TEST EQUIPMENT

2.1 Test Airplane

2.1.1 Test Airplane Description. The C-141A is a high wing, all metal, land based cargo transport. The general external configuration plus basic aerodynamic data is depicted in Figure 2-1. The wing is swept 25° at the quarter chord line and is of a basic wing box-beam construction. Integral fuel tanks are contained in the wing. The flaps are the Lockheed-Fowler type and are located at the wing trailing edge. The four flap sections are interconnected in such a manner that they extend and retract as a single unit. Spoilers for both ground and in-flight use are located on the upper and lower wing surfaces behind the rear beam. The fuselage is of semi-monocoque construction. The cargo compartment is located in the fuselage aft of the crew compartment and is equipped with an adjustable aft ramp and pressure door assembly which permits full pressurization and air conditioning of the entire flight deck and cargo compartment. Unpressurized fairing doors (petal doors) are utilized for ground loading and may be opened in flight at airspeeds up to 200 KCAS for aerial delivery of cargo. The petal doors in the AD configuration are shown in Figure 2-2. The cargo compartment floor incorporates an integral roller and rail installation which is compatible with the 463L loading system. The empennage consists of a variable incidence horizontal stabilizer and conventional elevator assembly mounted on top

of the fin and rudder assembly. The landing gear is composed of a dual wheel steerable nose gear and two single strut four wheel bogie main gears. Landing gear doors completely fair in all gear components when in the retracted position. The C-141A is powered by four Pratt and Whitney TF 33-P-7 turbofan engines each static rated at 21,000 pounds of thrust. Each engine is enclosed in a nacelle suspended from a pylon forward and below the wing. The controls are conventional in type (elevator, rudder, ailerons and aileron tabs) and are hydraulically powered. In addition to the primary flight controls, an automatic pilot, automatic yaw damper, and Mach trim compensator are employed as supplementary flight controls.

The C-141A possesses all weather capability to operate from any established air base, and in addition it can operate on a limited basis from fields which have no ground support equipment. The various mission capabilities of the C-141A are contained in Reference (2).

2.1.2 Basic Airplane Data. In addition to the basic aerodynamic data presented on Figure 2-1, the following figures are intended as an aid in utilizing this document. Figure 2-3 represents the gross weight center of gravity envelope. Level flight design speeds are presented in Figure 2-4. Airspeed load factor envelopes are presented for the clean configuration in Figure 2-5



and for the aerial delivery configuration in Figure 2-6.

Stall speed versus gross weight is presented in Figure 2-7

for the take-off and landing configuration and in Figure 2-8

for the clean configuration.

2.1.3 Aerial Delivery Subsystem - Cargo. The C-141A cargo handling and aerial delivery subsystem provides the capability to accomplish the rapid and efficient loading, restraint, off loading, and aerial delivery of bulk cargo and vehicles including the ARRAV (Armored Reconnaissance Airborne Assault Vehicle) rigged to Type II modular aerial delivery platforms.

The aerial delivery system consists of the following major components:

A. Conventional Tiedown Receptacles and Fittings

1. Receptacles for the installation of quick-disconnect tiedown fittings are spaced evenly in rows which run the length and width of the cargo compartment and ramp. Three types of receptacles are used: one for connecting individual 10,000-pound fittings, one for connecting individual 25,000-pound fittings, and a continuous-track type for connecting rigid troop seat fittings, and 10,000-pound fittings. The restraint rail fittings utilize the same receptacles as the 25,000-pound fittings.

B. Roller Conveyors

1. Four channels for the insertion of removable roller conveyor sections are permanently recessed into the cargo and ramp floors. The support channels are located symmetrically across the floor at left and right butt lines 15 and 51. The conveyor sections fit into the channels with the rollers above the surrounding floor level when placed for palletized cargo loading or for airdrops, but may be turned over in the channels, and locked into place with their smooth bottom surfaces flush with the surrounding floor for vehicle or troop loading. Each section contains individual bearing mounted aluminum rollers on 10 inch centers. When the conveyor is upright, the rollers project 1-1/2 inches above the floor level. Reinforced aluminum teeter rollers in steel supports are installed at the aft end of the cargo compartment, forward and aft end of the cargo ramp to support the higher loads that are incurred in these areas during cargo loading and airdrops.

C. Restraint Rails, Mechanisms and Controls

1. Retractable restraint rails are provided on both sides of the cargo compartment and ramp floor to aid in loading, restraining, and unloading palletized



cargo and airdrop platforms. Lockheed Engineering Report ER-5264, Reference (4), specifies the capabilities of the restraint rails. When fixed in position, the rails provide a continuous narrow channel down both sides of the compartment, for the entire length of the cargo compartment and ramp. These channels guide platforms and pallets in and out of the airplane, hold them down against the rollers; and with restraint mechanisms provided, prevent forward and aft movement. During airdrops, restraint mechanisms on the right rail may be set to apply a variable amount of aft restraint to the platforms.

2. The restraint rails for each side of the cargo compartment are built in ten sections. All sections forward of the troop door openings are attached to the side of the cargo floor by hinge straps and can be folded up under the side walkways when not in use. The remaining cargo compartment and all ramp restraint rails for each side of the cargo ramp are made in two sections. The aft sections flare outward to aid in funneling palletized loads or platforms into the rail system. All of the rail sections on the ramp and the aft sections in the cargo compartment are made as vertical walls with retractable lips for

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vertical restraint instead of fixed lips. These lips are retracted during loading and unloading of cargo, and during aerial delivery. They are extended if needed after the load is in place.

3. All of the cargo compartment left side restraint mechanisms are identical. They consist of a detent arm with lock mechanism, a handle for manually locking or unlocking the mechanism, and a sequence selector arm and pinion for use with the remote control feature. The detent when engaged prevents forward and aft movement of the pallet. The sequence selector arms on the mechanism are geared to the restraint mechanism and to the remote control shaft. Up to nine pallets can be sequenced to lock and unlock individually. This permits the loadmaster to unlock only the aft platform or any other preselected group of platforms while maintaining the other platforms locked. If the sequence selectors on all mechanisms are set to the same number, all will lock and unlock simultaneously. Two remote control units are provided for the cargo compartment left side locks; one at the forward end and one at the aft end of the cargo compartment. The two lever-type remote controls operate independently of each other and one must be disengaged and stowed in order to operate the other. The cargo



ramp left side restraint mechanisms are the same as the cargo compartment restraint mechanisms except they do not have sequence selectors, and can be released only at the forward end of the ramp. A cable release system is used to simultaneously release the two locks.

4. Right hand restraint mechanisms forward of fuselage station 1292 are identical. Each has a retractable detent which is spring-loaded to the engaged position. When forced through the rail the detent engages one indent in the pallet or airdrop platform and, if locked, prevents forward motion of the load. If the force attempts to move aft, the detent will hold any force up to that force set on the variable restraint adjustment, and then will be forced back into the rail, releasing the load.
5. Right side remote control is located at fuselage station 482 and consists of a handle on an arm which is geared to the push-pull rods which extend the entire length of the right side restraint rail. The remote control will override the setting of the individual mechanisms and will lock in place when all detents are engaged. Markings on the push-pull rod and

an index mark on the rail located just aft of the control permits the operator to pre-position the push-pull rod for one-stroke unlocking of the detents for emergency release of aft restraint during aerial delivery. Just forward of the right remote control is a ratchet pawl which provides a holding stop for the push-pull rods when they have been actuated to the full unlock-disengaged position. When this pawl has been engaged it must be released prior to actuation of the control to engage-and-lock. Restraint mechanisms on the cargo ramp must be operated manually at the mechanism.

D. Cargo Winch Installation

1. A recessed compartment for permanently stowing a cargo winch is located at the forward end of the cargo compartment floor, beneath the flight station. The cargo winch has a retractable wheel at each corner, and may be rolled out of the compartment, and attached to standard cargo compartment floor tiedown fittings if desired. Normally the winch is operated without removing from the compartment, and snatch blocks are used to provide side pulls or multiply forces if necessary. The winch is powered from the No. 3 main

AC bus (400 cycle, 3-phase, 200-volt). A remote control on an extension cable permits freedom of movement while operating the winch. A removable cable guide roller is provided to keep the winch cable close to the compartment floor enabling it to be extended under forward pallets or platforms and winch in additional load. The cargo winch can also be used to retrieve paratroop static lines or hung paratroops.

E. Extraction Parachute Initiation Device and Control

1. A mechanism for holding the extraction parachute ready for deployment is mounted overhead in the cargo compartment between fuselage station 1338 and 1398. It consists of a support housing, a parachute holder which fits into the support housing, an uplock mechanism, which locks the holder in the support housing; an uplock indicator, which indicates the condition of the uplock; and an ADS manual armed switch, which controls indicator lights in the flight station. An opening in the top of the housing permits a cable from the hand winch to pass through the housing before attaching to the parachute holder. The release mechanism contains a manually armed release solenoid, which is operated electrically by the CHUTE RELEASE switch at the pilot's, copilot's and navigator's stations, or manually by the control at the

loadmaster's crew door station. When the solenoid is actuated it operates a release lever on the parachute holder, which drops the parachute.

2. A hand-operated winch for raising and lowering the extraction holder is mounted on the right wall of the cargo compartment opposite the parachute holder. The parachute holder uplock is checked visually locked by noting that the uplock indicator does not protrude, and that the parachute holder does not lower when the winch is backed off. An aft-facing, finger like fitting is recessed into the overhead structure, aft of the support housing, for attachment of the parachute pendulum line. This fitting is the pivot point about which the extraction parachute rotates as it drops over the ramp. A spring clip on the fitting prevents the line from slipping off inadvertently before the extraction parachute is dropped.
3. A small fitting, the parachute extraction line restraint fitting, is used as a tie point for the line from the extraction parachute. The fitting is installed in the 10,000-pound tiedown receptacle at ramp station D-6, and keeps the extraction line taut between this tie point and the extraction parachute holder.

F. Static Anchor Line Cables

1. Components for installing anchor cables are contained on the airplane. For paratroop drops off the ramp, one inboard anchor cable is installed down each side of the cargo compartment. The aft anchor cable supports are permanently attached to the sidewalls of the unpressurized section of the fuselage just aft of the pressure door. Tripod-type forward supports capable of holding one anchor cable each are attached to sidewall brackets at fuselage station 508, and when not in use the supports are stowed on the right sidewall fuselage station 688. When the anchor cables are installed in the cargo drop, or paratroop over ramp configuration, the anchor cables have to be stowed in a notch in the sidewall bulkhead at the side of the pressure door before the pressure door can be closed. Thus, the aft anchor cable supports are hinged, electrically actuated, and are sequenced to extend after the pressure door is opened and retract prior to pressure door closing.

2.2 Instrumentation

- 2.2.1 General Information. Instrumentation in accordance with the requirements of Reference (1) was installed on the test airplane. The basic instrumentation consisted of one automatic observer

panel and two recording oscillographs. The recording instrumentation plus its associated signal conditioning units, power supplies, and control systems was installed in the galley and on the flight deck in order that an unobstructed cargo area could be obtained.

2.2.2 A.O. Panel. The measurements located on the A.O. panel are listed below.

1. Time of Day
2. Ten Second Sweep
3. Free Air Temperature
4. Pilots Airspeed (ships system)
5. Pilots Altitude (ships system)
6. Time Correlation Counter
7. A.O. Frame Counter
8. Flap Position Indicator
9. EPR Indicator (4 engines)
10. Horizontal Stabilizer Position Indicator
11. Oscillograph No. 1 Record Number
12. Oscillograph No. 2. Record Number
13. Event Light

2.2.3 Oscillograph Measurements. Items recorded on the oscillographs are listed below.

A. Oscillograph Number 1

1. Horizontal Stabilizer Torsion @ HBL 44L
2. Horizontal Stabilizer Bending @ HBL 44L

3. Horizontal Stabilizer Shear @ HBL 44L
4. Vertical Stabilizer Bending @ VSS 345
5. Fuselage Vertical Bending @ FS 1048
6. Fuselage Vertical Bending @ FS 1568
7. Pitch Trim Actuator Load
8. Ramp Actuator Load, R.H.
9. Ramp Actuator Load, L.H.
10. Ramp Hinge Drag Load, L.H.
11. Ramp Hinge Drag Load, R.H.
12. Ramp Hinge Vertical Load, L.H.
13. Ramp Hinge Vertical Load, R.H.
14. Ramp Hinge Total Side Load
15. Spider Arm Load R.H.
16. Spider Arm Load L.H.
17. Vertical Acceleration, F.S. 277
18. Vertical Acceleration, F.S. 1637
19. Vertical Acceleration, F.S. 932 (C.G.)
20. Longitudinal Acceleration F.S. 932 (C.G.)
21. Time Correlation

B. Oscillograph No. 2

1. Rate of Pitch
2. Angle of Sideslip
3. Elevator Stick Force

4. Aileron Wheel Force
5. Rudder Pedal Force
6. Elevator Position, (L.H. side)
7. Aileron Position. (L.H. side)
8. Rudder Position
9. Angle of Pitch
10. Angle of Bank
11. Restraint Rail Detent Release (Positions 1 thru 20)
12. Parachute Extraction Force
13. Angle of Attack
14. Photo Cell Velocity Pick-ups

© FS 847

© FS 932

© FS 1051.5

© FS 1130

© FS 1244.5

© FS 1393.5

© FS 1435 (Ramp Lip)

2.2.4 Gun Cameras. Three 16 MM TM-9 gun cameras were installed to provide additional photographic coverage of the tests. The basic coverage afforded by these cameras was the following.

1. View looking straight aft down the centerline of the airplane, camera mounted in overhead.
2. Camera mounted on L.H. side of fuselage looking straight

aft down the canted longeron and L. H. pedal door.

3. Camera mounted on L. H. side of fuselage looking diagonally across the entire ramp area.

The gun camera locations and sightings were varied slightly at times to meet the conditions of a particular test.

2.3 Dummy Drop Equipment

Three types of dummies were used during the dummy drop tests.

- 1) Rope head dummy-weight 140 lbs, 2) Torso dummy 200 lbs, and
- 3) Sixty percentile anthropomorphic dummy-weight 160 lbs. The sixty percentile anthropomorphic dummy was instrumented to measure acceleration about all three axis. Cameras were installed to give dummy position so that the acceleration could be correlated with the dummy position during recovery operation.

Standard T-10 parachutes with 15 feet static lines were used for most of the dummy drops, but some drops were made with 19' and 25' static lines.

Three dummy ejection frames, which were made locally at El Centro, were used to airdrop the dummies out the paratroop doors, and over the ramp. These ejection frames helped get the dummy out into the slip stream to simulate a paratrooper leaving the airplane.

An "A" frame was locally manufactured to assist in the retrieval of a "hung" dummy from the ramp. This "A" frame was located on the fuselage sidewall just aft of the ramp, and allowed the parachute static line to ride higher up, and keep the dummy from oscillating.

2.4 Extraction Lines And Parachutes

2.4.1 Extraction Lines. The extraction lines employed in testing consisted of the type 26 8-ply, type 26 10-ply, type 10 2-ply, type 10 6-ply and the type 10 8-ply. Line lengths of 60 feet, 80 feet, 100 feet, 120 feet, and 145 feet were utilized.

2.4.2 Extraction Parachutes. Ring slot parachutes tested consisted of a 24'D₀, 15'D₀, 22'D₀, and a 28'D₀. With the exception of the 24'D₀ parachute, the above are all standard extraction parachutes. The 24'D₀ ring slot parachute is a reinforced parachute which is employed on the B-58 airplane as a drag parachute. It is not a standard item in the ADS inventory but was needed for reliability on drops at speeds above 160 KCAS. Another non-standard item employed was the 32'D₀ fist ribbon parachute. This parachute was employed in areas where the ability of the 28'D₀ parachute to produce the desired 1.0g extraction rate was marginal.

2.5 Cargo Description

2.5.1 Cargo Components. The cargo airdrops tested were all of a similar nature with the exception of total weight. The general arrangement of components and rigging of the test loads are shown in Figure 2-9.

The weight desired was achieved by placing steel weights (each approximately 500 pounds) inside the bathtub. This assembly was then placed on the platform with sufficient shock absorbing honeycomb to prevent damage to the bathtub. The bathtub and weights were secured to the platform by means of tiedown chains rigged diagonally along each side of the tub. The cargo parachutes were attached to a plywood support assembly which was secured to the top surface of the bathtub in most cases. In some cases, the cargo parachutes were mounted directly on the platform. The extraction line was attached to a guillotine assembly on the tub. This guillotine assembly was connected by a lanyard to the static line on the left hand side of the airplane and disengaged the extraction line from the tub as the load was exiting the ramp. Simultaneously a pin was fired in the Go/No-Go clevis (attached by lanyard to the right hand static line of the airplane) which made a connecting line between the extraction line and the cargo parachutes.

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The extraction parachute then deployed the cargo parachutes which lowered the load to the ground. Table A-4 in the appendix depicts a summary of all the applicable C.G. positions and weights of the loads used during the airdrops. Load profiles of each cargo airdrop are depicted by Figures B-1 through B-43D in Appendix B.

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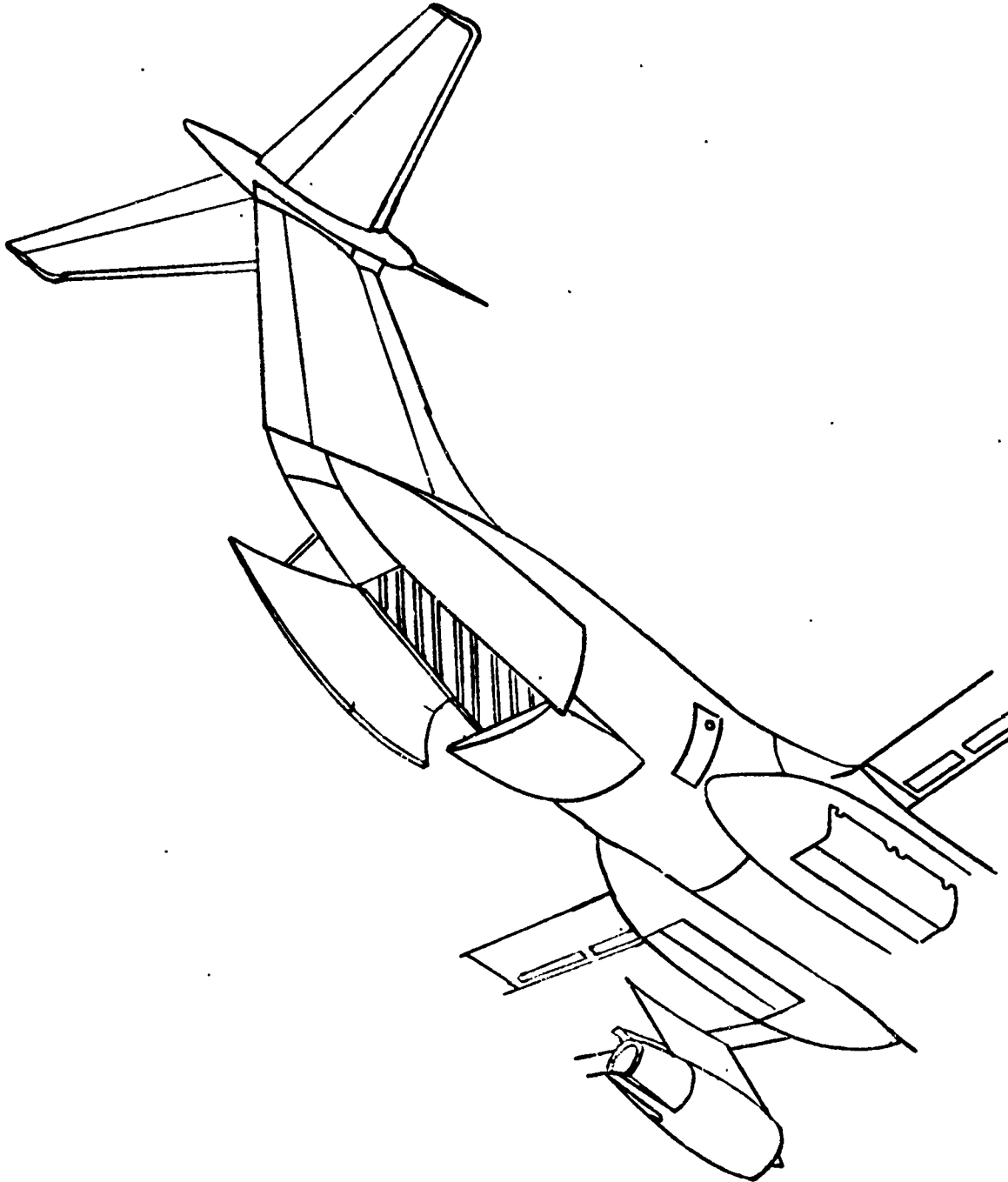
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PETAL DOORS AND RAMP IN AIR DROP POSITION

MODEL C-141A



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C-141A CENTER OF GRAVITY ENVELOPE

NOTE

1. L.E. OF MAC @ FS 858.9
2. MAC ~ 265.7 IN.

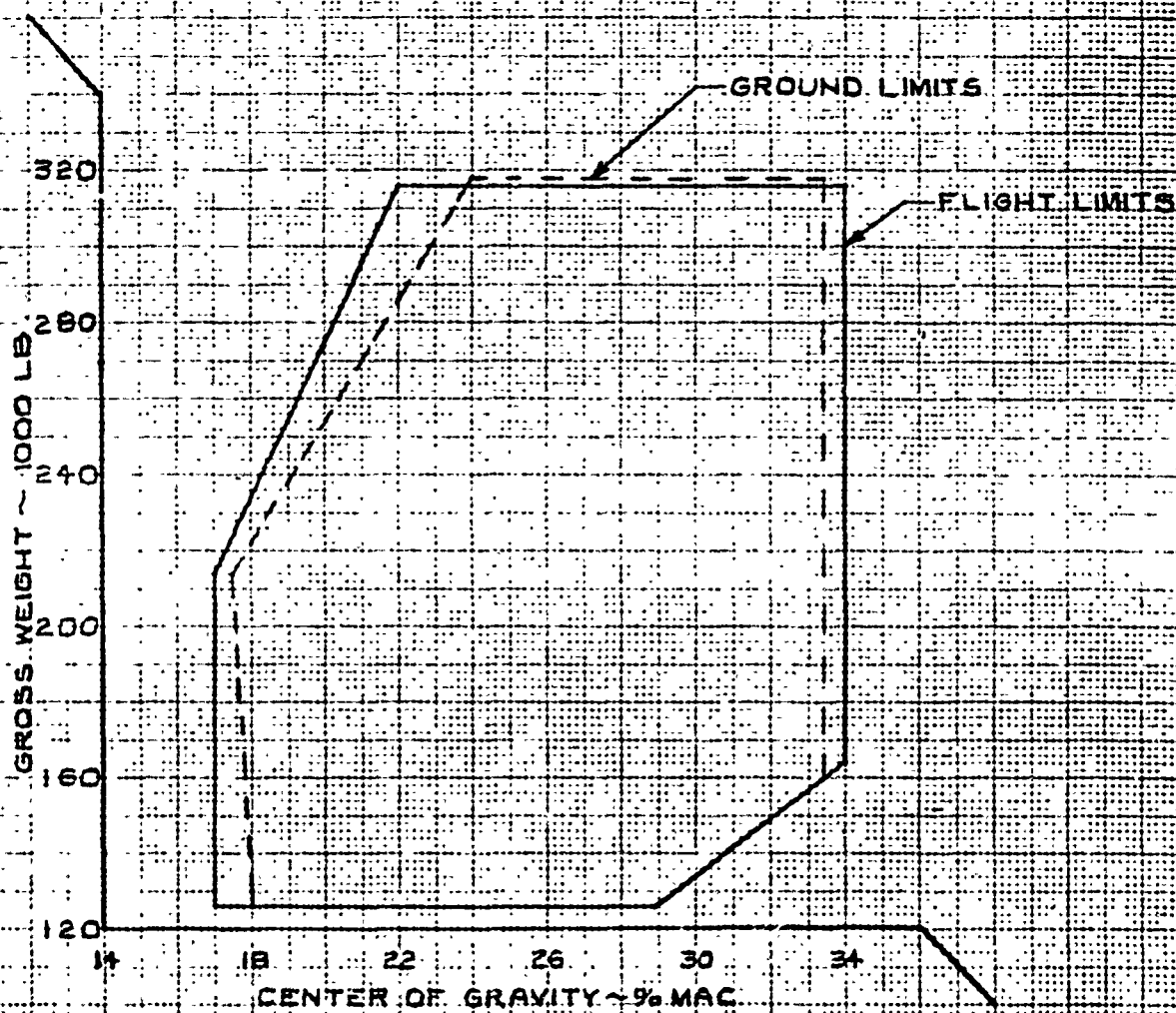


FIGURE 2-3

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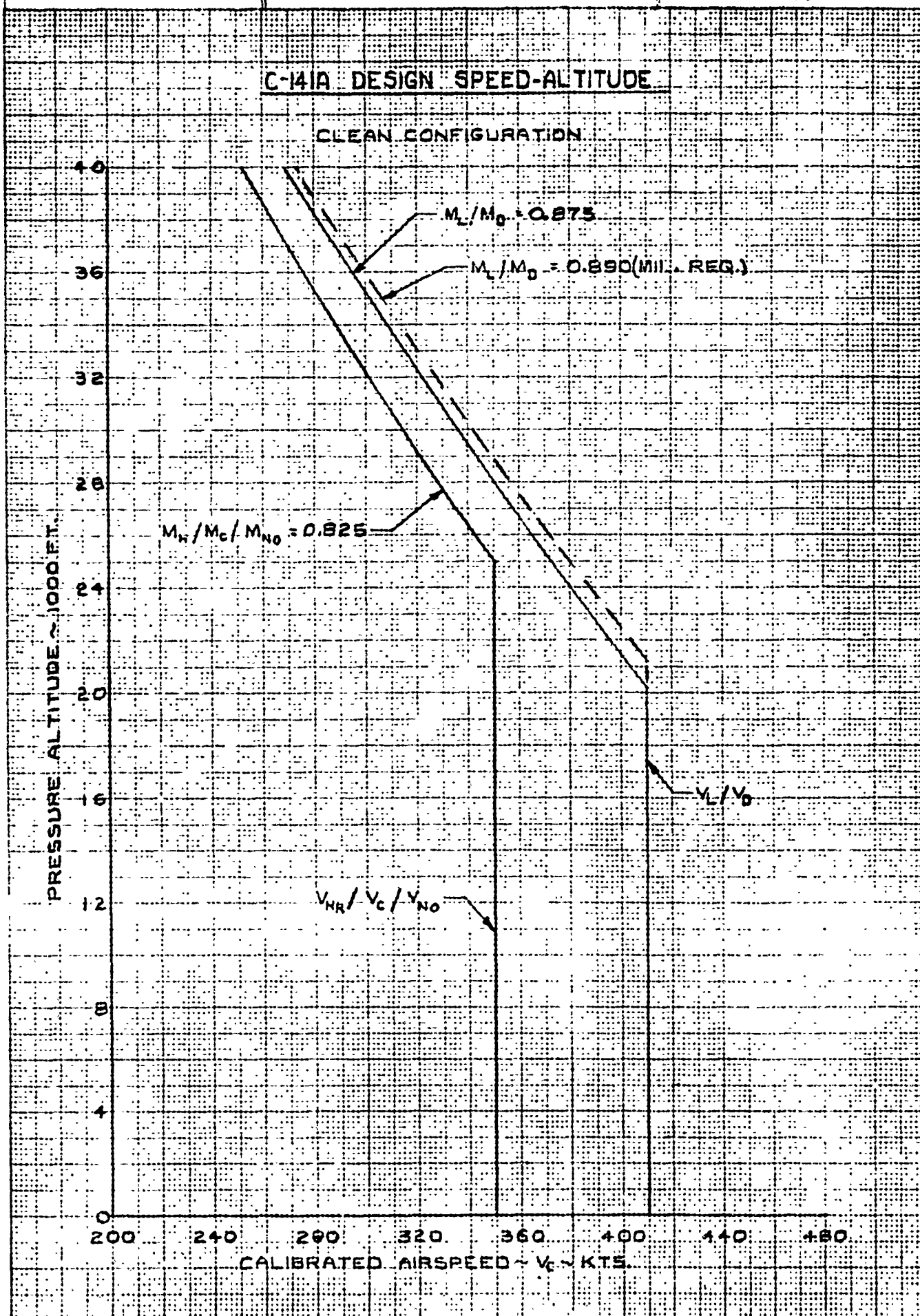


FIGURE 2-4

PREPARED BY JWP
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C-141A AIRSPEED-LOAD FACTOR ENVELOPE
CLEAN CONFIGURATION

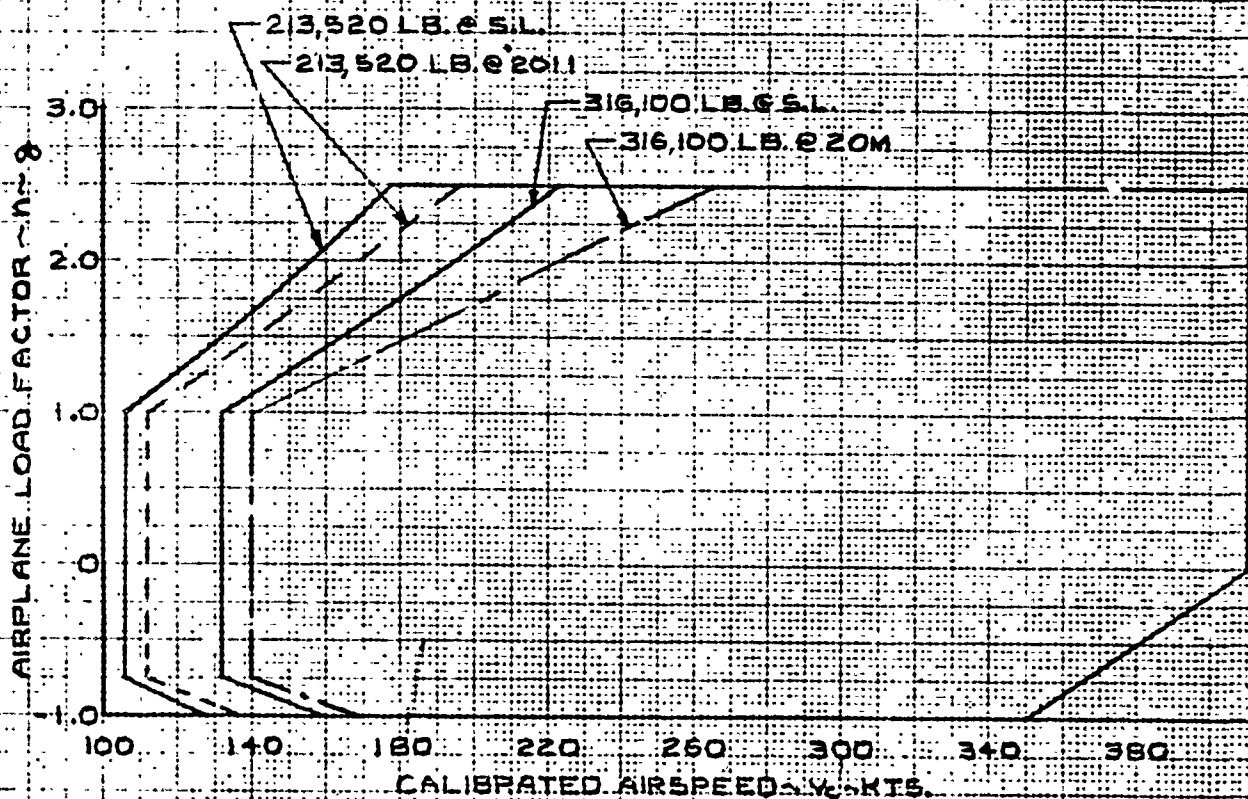


FIGURE 2.5

PREPARED BY fw
DATE _____
CHECKED BY _____

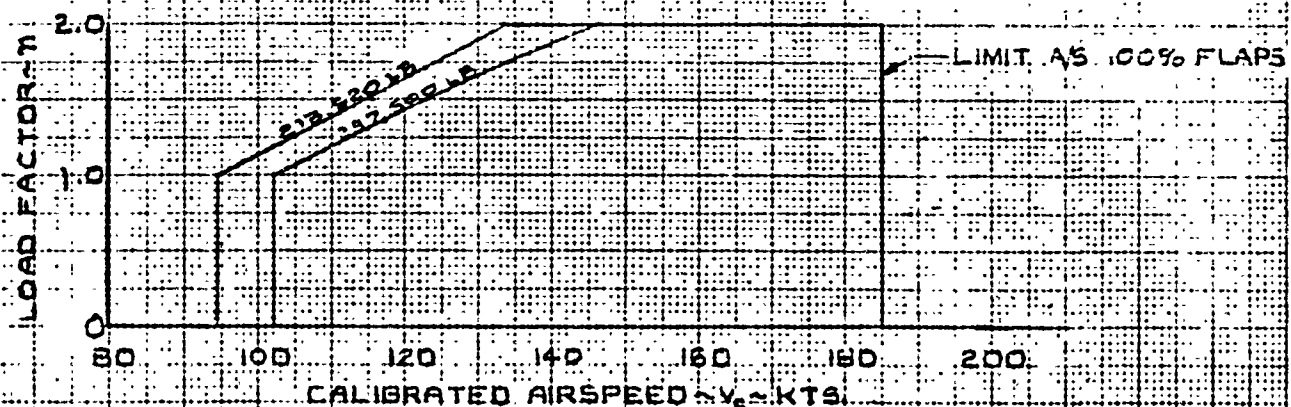
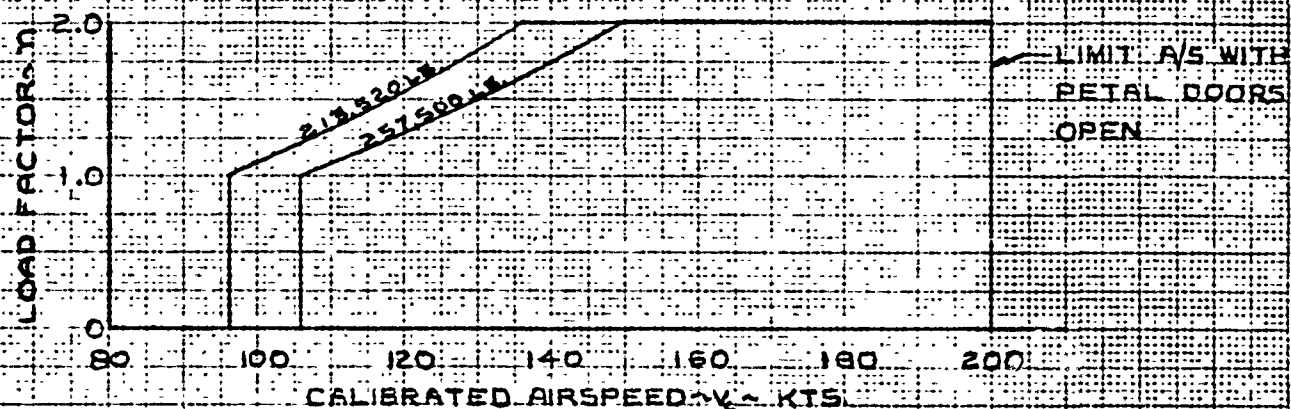
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C-141A AIRSPEED-LOAD FACTOR ENVELOPE

CONFIGURATION

1. PETAL DOORS OPEN
2. GEAR UP
3. FLAPS DOWN



GA FORM 5500-2

FIGURE 2-6

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STALL SPEED VS GROSS WEIGHT

MODEL C-141A

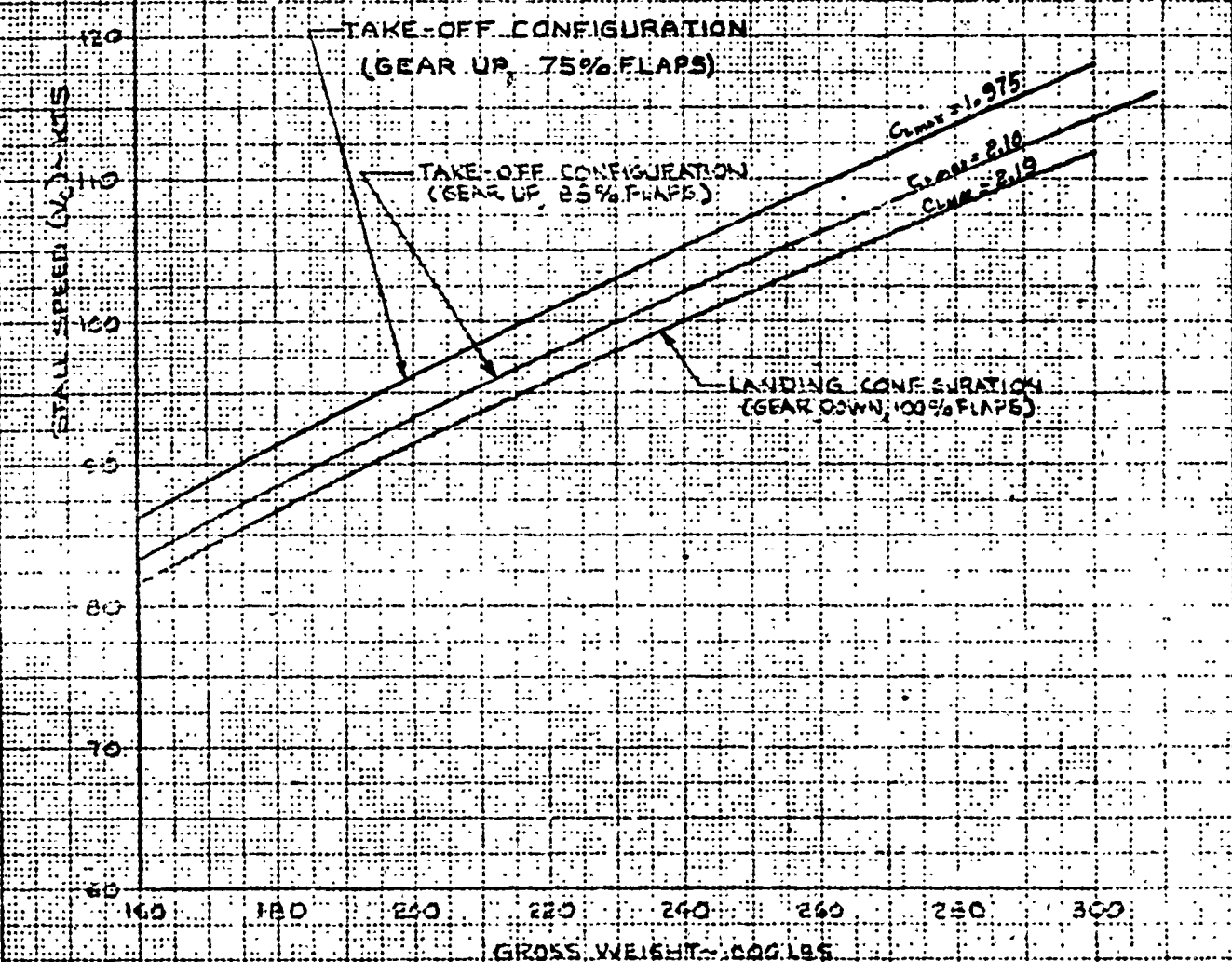
AF 61-7275

TAK 6001

T.O. & LANDING CONFIGURATION

NOTE

1. STALL SPEED FOR T.O. CONFIGURATION BASED ON $C_{L_{MAX}} = 2.10$, GEAR UP
2. STALL SPEED FOR LANDING CONFIGURATION BASED ON $C_{L_{MAX}} = 2.19$, GEAR DOWN
3. ALL DATA OBTAINED AT FORWARD C.G.
4. SEE CURVES 6001-722 & 723 FOR DATA USED



100-102-110-1
 GA FORM 1549-2

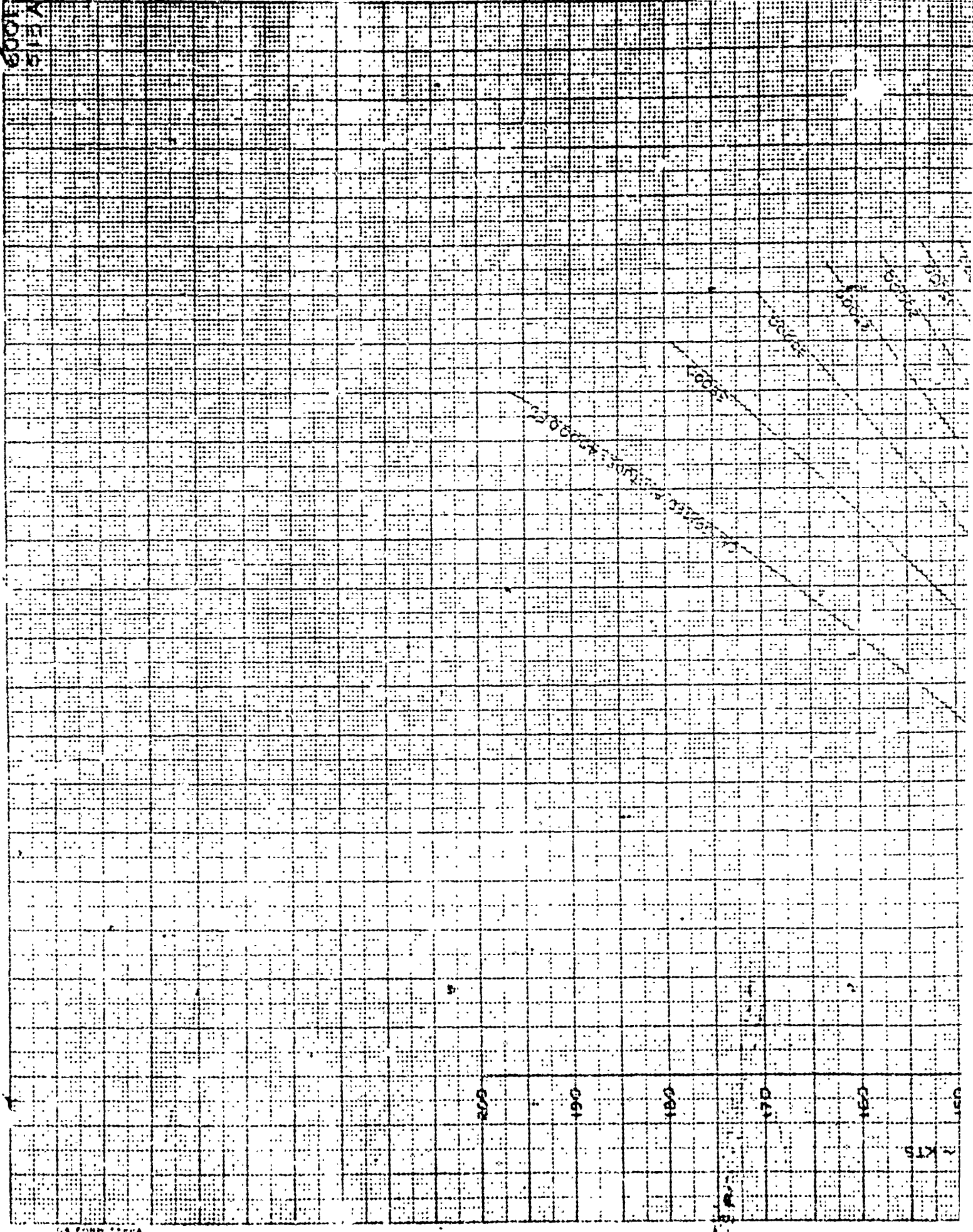
THIS CURVE SUPERSEDES 6001-507

6001

FIGURE 2.7

721

6001
515A



2X15



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 DATE 9-18-65
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STALL SPEED

GROSS WEIGHT

MODEL C-141A
 SEE FIG. 2-1

CLEAN
 CONFIGURATION

NOTE:
 DATA BASED ON LINE AND
 APPLICABLE ONLY FOR STRAIGHT
 FLIGHT AT AN ENTRY RATE OF
 10 FT/SEC.
 STALL COMPUTED BY N 275
 655025-111

STALL SPEED (KNOTS)

1000
900
800
700
600
500
400
300
200
100
0

150

140

130

120

110

100

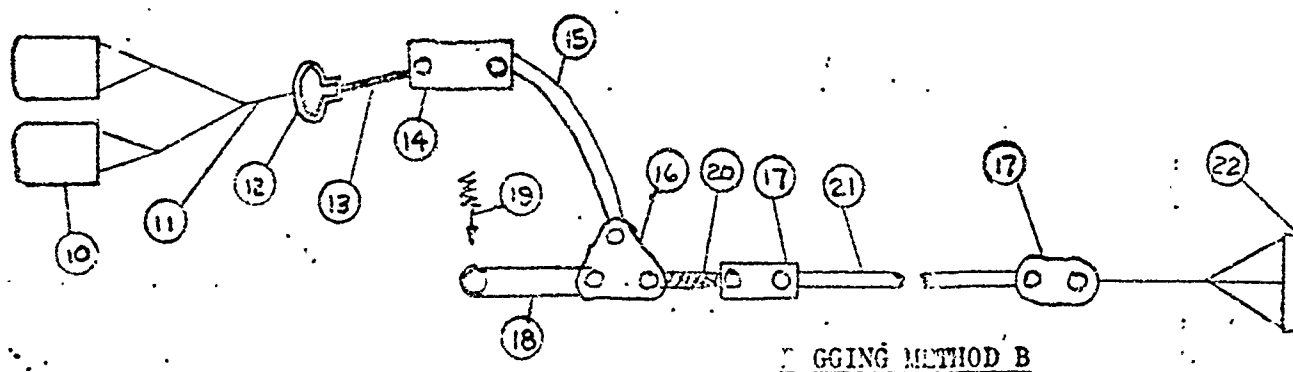
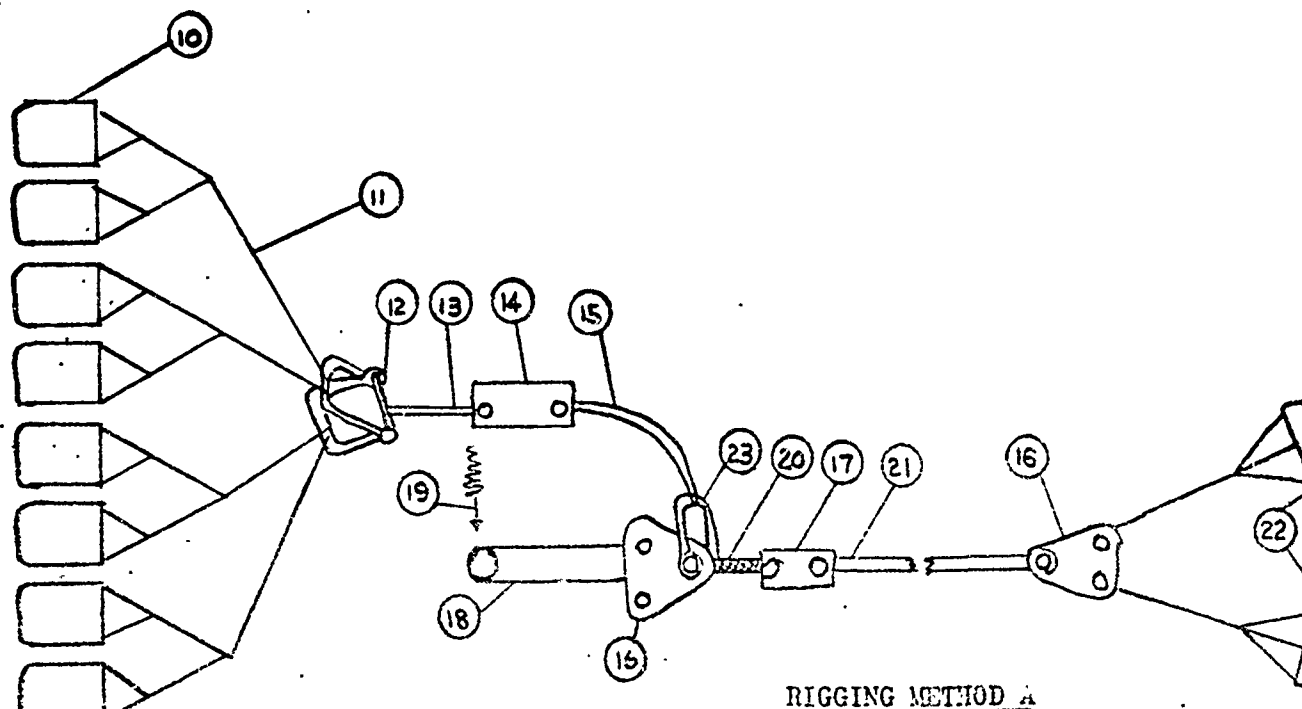
90

80

FIGURE 2-8

6001
 513A

ADS CARGO AND RIGGING DIAGRAM



CARGO AND RIGGING COMPONENTS

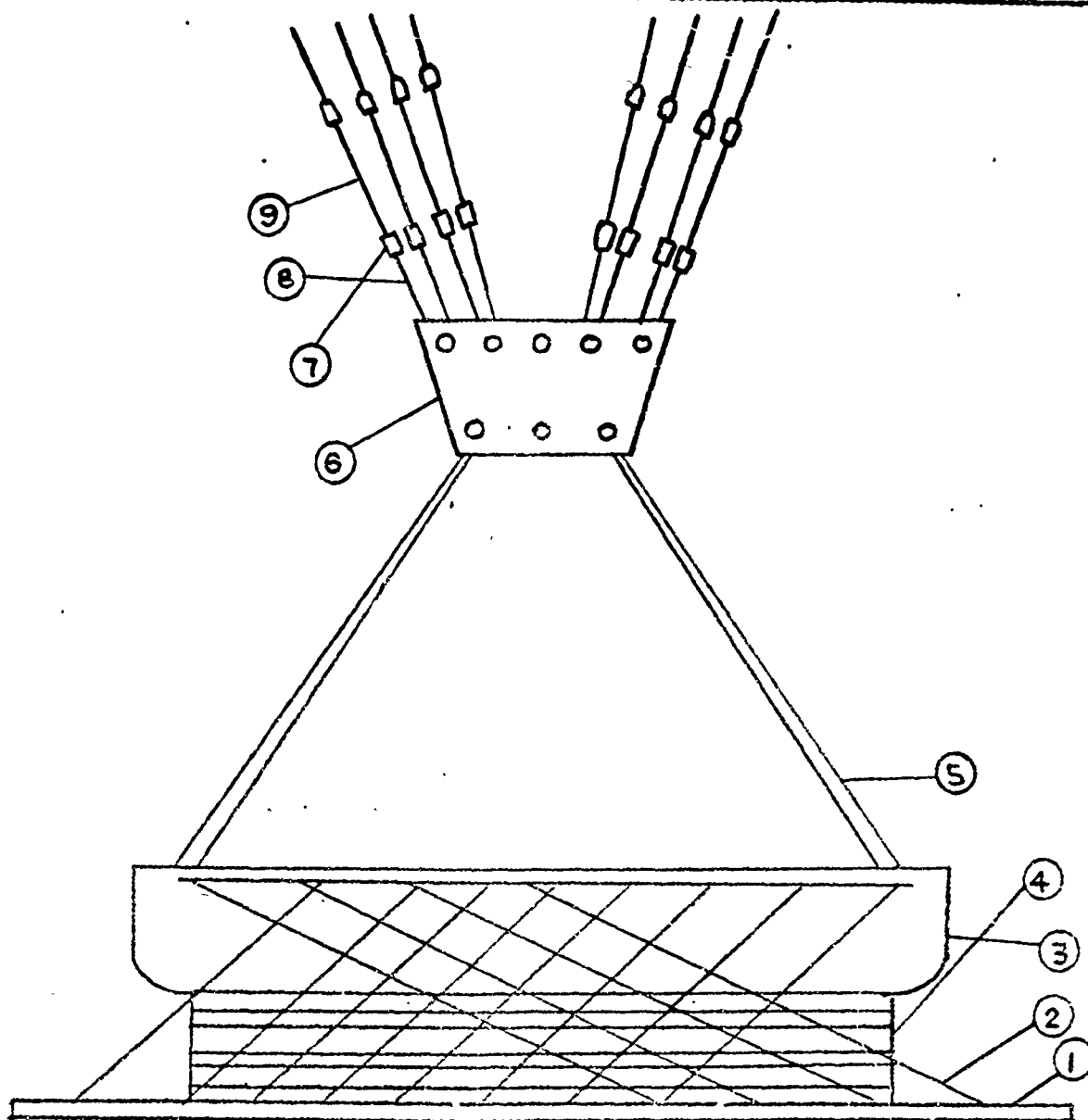
- | | |
|---------------------------|----------------|
| 1. Modular Platform | 12. G-11A Cle |
| 2. Chains 10,000 lb. T.S. | 13. Go/No Go |
| 3. Tub and Weights | 14. Go/No Go |
| 4. Honeycomb | 15. Deployment |
| 5. Suspension Risers | 16. 3 Point C |
| 6. Load Coupler | 17. 2 Point C |
| 7. Ground Release | 18. Knife Cut |
| 8. Ground Release Riser | 19. Guillotin |
| 9. Cluster Risers | 20. Strain Ga |
| 10. G-11A Cargo Chute | 21. Extractio |
| 11. Deployment Webs | 22. Extractio |
| | 23. Special C |

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DIAGRAM



Clevis (Single or Double)
 Go Web
 Go Clevis
 ment Web
 ht Clevis
 ht Clevis
 Cutter Web
 otine Knife
 a Gage
 ction Line
 ction Parachute
 al C-11A Clevis

FIGURE 2-9

3.0 TEST PROCEDURES

3.1 Dummy Drops

3.1.1 Single Dummy Drops - Paratroop Doors Only. For this series of tests, the configuration was paratroop spoilers extended, troop door jump platforms installed, static anchor line cable installed for paratroop door jumps, dummy ejection frames installed, and petal doors closed. The side of the fuselage was coated with black grease to indicate any contact with the parachutes and/or lines during the drop. The procedure employed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. open paratroop doors and extend troop door spoilers,
3. install troop door jump platform,
4. install and tie down dummy ejection frame,
5. install dummy in the ejection frame and attach static line to the anchor cable,
6. push dummy out on count down from ground control.

During this series of tests, the static line retrieval test was accomplished. Three ropehead dummies, and 56 static lines (with bags attached) were employed for these tests. The first dummy static line was attached to the outboard anchor cable, then 28 static lines with bags were attached. The second dummy was attached to the inboard anchor cable along with another 28 static lines and bags. The third dummy was also attached to the inboard

anchor cable. The above were ejected in the following order:
dummy #1, 28 static lines, dummy #2, 28 static lines, and dummy
#3. The retriever winch was then employed to retrieve all static
lines and bags.

3.1.2 Single Dummy Drops - Cargo Ramp Only. The configuration employed
for these drops was paratroop doors closed, static line anchor
cables installed for cargo ramp drops, petal doors open to 38°
position, and ejection frames installed. The overhead area of
the fuselage from just aft of the ramp to the tail cone was
masked with grease covered tape strips placed about 8 to 10
inches apart. The purpose of these strips was to indicate any
contact between the parachutes and adjacent airplane structure.
The procedure followed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. lower ramp and open petal doors to 38° position,
3. install and tiedown dummy ejection frame,
4. install dummy in ejection frame and connect static line
to anchor cable,
5. rig static line retriever winch cable,
6. push dummy out on countdown from ground control.

3.1.3 Multiple Dummy Drops - Paratroop Doors Only. The configuration
and procedures employed were the same as those in Section 3.1.1,

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except the static line retriever winch was rigged for retrieval of static lines. A concentrated effort was made to release the dummies at one second intervals to simulate proper spacing.

3.1.4 Multiple Dummy Drops - Cargo Ramp Only. The configuration and procedures employed were the same as those in Section 3.1.2. In addition, the 60° petal door position was employed on some tests, and the dummies were released at approximately one second intervals.

3.1.5 Simultaneous Dummy Drops - Paratroop Doors And Cargo Ramp. The configuration for these tests was paratroop doors open and troop door spoilers extended, troop jump platforms installed, anchor cables installed for troop door and ramp jumps, petal doors open to 38°, and ejection frames installed. The forward edge of the petal doors, the fuselage aft of the paratroop doors, and the fuselage overhead aft of the cargo ramp were all coated with a substance to indicate any contact of the parachutes and/or static lines with the airplane. The procedure followed was:

1. Stabilize airplane @ desired airspeed and altitude,
2. open paratroop doors and extend troop door spoilers,
3. install troop jump platforms,
4. lower ramp and open petal doors to 38°,

5. install one dummy in the ejection frames at each paratroop door and at the cargo ramp,
6. simultaneously push out each dummy on countdown from ground control.

3.1.6 Dummy Retrieval Test - Paratroop Door Only. This retrieval test was accomplished with a ropehead dummy and was identical to the configuration and procedures detailed in Section 3.1.1 with the following exceptions. The static line roller bar was installed, and the static line to the dummy was intentionally rigged such that it would foul. As soon as the dummy assumed a trailing position, it was retrieved by the static line retriever.

3.1.7 Dummy Retrieval Test - Cargo Ramp Only. Two dummy retrieval tests were conducted from the cargo ramp. A ropehead dummy, and an instrumented anthropomorphic dummy were employed for these tests. The petal doors were opened to the 60° position for these tests. An additional "A" frame was installed on the right hand side of the fuselage for the anthropomorphic dummy retrieval. Aside from these exceptions, and the fact that the dummy static lines were intentionally rigged to foul, the configuration and procedures employed were the same as those outlined in Section 3.1.2.

3.2 Extraction Parachute and Line Tests

3.2.1 General Procedure. Extraction parachute tow tests were accomplished by the following general procedure.

- a. Open petal doors approximately 3 minutes before parachute deployment.
- b. Stabilize airplane at desired flight conditions.
- c. Deploy parachute on countdown from ground control station.
- d. Add power as required to maintain airspeed and altitude (4 engines).
- e. Attempt to maintain level deck angle.
- f. Tow parachute for 5-8 seconds.
- g. Manually cut parachute away with guillotine knife.

This general procedure was amended on several tests to investigate any jet blast effects on the extraction parachutes. During these tests, the inboard engines (No. 2 and No. 3) were cut back to flight idle after parachute deployment and all increased power application was accomplished on the outboard engines (No. 1 and No. 4).

3.2.2 Extraction Line Length Determination. Minimum extraction line lengths were established by attaching various length lines to the same fuselage station and towing under the influence of a small (4 or 8 ft. dia.) parachute. The behavior of the extraction line and its characteristics were noted and evaluated as to their suitability. No extraction forces were measured. The fuselage station of the line attachment point was moved forward and the extraction line length was increased to a value such that the extraction parachute remained in the same location relative to the airplane tail cone.

3.3 Cargo Airdrops

3.3.1 Single Package Airdrops Single package loads were airdropped in accordance with the following procedure.

- a. Open petal doors approximately 5 minutes from load release and stabilize airplane on desired speed, altitude, and heading.
- b. Loadmaster's final check of rigging, and area aft of load.
- c. Cut safeties on guillotine knife.
- d. All personnel forward of the load.

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- e. Unlock left hand locks at approximately 3 minutes out.
- f. Arm extraction parachute at approximately 30 seconds out.
- g. Release load on countdown from ground control station.

On most drops, the right hand restraint rail setting employed was 0.5 x cargo weight. However, this setting was appropriately reduced for the planned low extraction ratio drops. The airplane was allowed to respond to the influence of the load leaving and the pilot applied pitch control only when it was felt that the resultant pitch rate was becoming excessive. In each instance of pitch control, the pilots intention was merely to check the pitch rate and not to reverse pitch direction. Extraction parachute release was accomplished from the pilot's ADS panel, co-pilots ADS panel, and navigators ADS panel during the course of testing. In the majority of drops, the co-pilots ADS panel was employed for release of the extraction parachute.

3.3.2 Multiple Package Airdrops. The procedures for the sequential airdrops were similar to those described above for the single package drop. The primary difference between sequential and single package airdrops was in rigging procedure and pilot technique. For the sequential airdrops, the extraction parachute for the first load out was mounted on the extraction parachute assembly in the overhead aft of the load, then the

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extraction parachute for each successive load was attached to the platform of the load preceding it out of the airplane. In addition, the pilot applied appropriate elevator inputs to dampen the rate of pitch and maintain a level deck angle.

4.0 TEST RESULTS

4.1 Dummy Drops

4.1.1 Cargo Compartment Airflow In Various Door Configurations. Tests were conducted to evaluate the resultant flight characteristics of the airplane and the airflow pattern around paratroop and cargo exits with various combinations of cargo compartment troop doors, and cargo doors open, closed, or in transit. The following configurations were tested as dictated by Reference (1).

A. Cargo Drop Configuration

Paratroop Doors Closed

Ramp Down, Petal Door Open 60°

Gear Up

Anchor Cable Installed

The cargo doors (petal doors, cargo ramp, and pressure door) were modified to the latest configuration just prior to the Aerial Delivery System Tests. The major changes were: 1) Installation of new petal doors with strake, 2) Installation of higher torque petal door actuators, 3) Revision to petal door control switches and indicating system, 4) Modification to sloping longeron near pressure door to allow anchor cable storage with pressure door closed. During previous structural

testing of the cargo doors with the petal door strakes added, the ground rigged door open position was changed from 55° to 60° for the full open position and 38° for the intermediate position. This change was made to assure that the petal doors opening at all airspeeds up to 200 KCAS would be greater than the cargo envelope of the cargo rail system.

The cargo doors were opened to the full (60°) and intermediate positions at all airspeeds up to 200 KCAS. The petal door loads exceeded design limit in compression for the 60° door position in the 13.5" strake configuration at 200 KCAS and $0.7 \sigma_F$. In this configuration, at speeds above approximately 180 KCAS, petal door blow-in was sufficient to deflect the doors such that the latches would engage and lock the petal doors before the petal door actuator rod ends were faired into the fuselage. Therefore, the petal door actuator rods and the petal door latches were put in a bind sufficient to cause difficulties in the following opening cycle of the petal doors. This locking/unlocking problem was corrected by a petal door actuator cut-off switch mounted in the hayloft. This switch was positioned such that contact with it could not be made until the petal door actuator rod ends were faired into the fuselage. In addition, it was electrically connected in series to the existing actuator cut-off switches. Thus, the petal doors had to be locked and the actuator rod ends had to be faired into the fuselage before the hydraulic actuator

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received an electrical shut-off signal. Strake removal during the latter portion of the test program reduced the petal door loads at all airspeeds, and in addition it reduced the amount of petal door blow-in. The airflow aft of the ramp appeared to be less turbulent with the strakes removed. Cargo airdrops were satisfactorily performed in this configuration at airspeeds up to 200 KCAS. However, at speeds above 180 KCAS in the AD configuration, long periods of flight should be avoided due to considerable buffeting and vibration throughout the airplane. This buffeting is very pronounced during the initial opening and just prior to closing of the petal doors.

Tests were conducted to determine the airflow in the ramp area in the cargo drop configuration. Initial tests were made which indicated that only the center portion of the cargo ramp could be worked effectively above 150 KCAS due to the inflow of air around the forward portion of the ramp. In order to improve the airflow over the ramp, buffer boards similar to those used on the HC-130 airplane were installed and tested. With the buffer boards installed, the entire ramp area was workable up to 200 KCAS. Later tests were conducted with retractable buffer boards used for airdrops, and these buffer boards appeared to be as effective as the fixed boards. However, the present position of the U. S. Army is that it intends to perform no troop drops at airspeeds above

135 KCAS due to the parachute opening shock experienced by the jumper. Therefore, present plans are to delete the buffer boards from the cargo drop configuration.

B. Paratroop Drop Configuration (Paratroop Door Only)

Paratroop Doors Open (one or both)

Paratroop Spoilers Extended (one or both)

Paratroop Jump Platform Installed (one or both)

Ramp Up, Petal Doors Closed

Anchor Cables Installed

The paratroop doors were opened, paratroop spoilers extended, and paratroop jump platforms installed at airspeeds up to 200 KCAS. The only difficulty encountered during these operations was the blow-in of the paratrooper door after the door was unlocked. This blow-in is more pronounced in the flaps up configuration, and caution should be used in opening the paratroop doors above 160 KCAS. Once the initial blow-in has occurred the door can be raised without difficulty. The paratroop spoilers operated satisfactorily at all speeds tested. The paratroop jump platforms can be extended much easier after the paratroop spoilers are extended, and this procedure is recommended.

The paratroop door spoilers are effective, and the paratroop doors can be approached without difficulty at all airspeeds

through 200 KCAS. Dummies were ejected at 200 KCAS, and there did not appear to be any problems encountered during the exit. With one paratroop door open and one paratroop spoiler extended, the pilot reported a definite tendency for the airplane to yaw. Flap angles do affect the flow around the paratroop doors, but all areas of the paratroop doors are workable for all flap configurations.

C. Paratroop Drop Configuration (Paratroop Door And Cargo Ramp)

Paratroop Doors Open, Spoilers Extended

Paratroop Jump Platforms Installed

Ramp Down, Petal Doors Open

Anchor Cables Installed

The flight characteristics of the airplane are considered satisfactory in this configuration, although as previously stated in the cargo drop configuration, considerable buffeting and vibration exists above 180 KCAS. However, the airflow in the ramp area, and the center cargo compartment area just forward of the ramp and between the paratroop doors is not satisfactory at airspeeds above 140-150 KCAS with less than 80% flaps. The airflow in the ramp area can be improved to a satisfactory level by the addition of the ramp buffer boards. The buffer boards however, have no effect on the area between the aft end of the paratroop doors and the forward end of the ramp. This area does become workable when the flaps are down 80% or

more. This flap angle is not satisfactory for the 150-200 KCAS airspeed range due to the resultant negative deck angle. Indications were that the airflow aft of the ramp is quite turbulent in this configuration.

4.1.2 Exit From Paratroop Door Only. Individual and stick dummy drops were made from the paratroop doors only at airspeeds of 120, 135, 150, and 200 KCAS as specified in Reference (1). The lowest airspeed was increased to 120 KCAS in order to maintain a $1.3V_S$ minimum speed for dropping paratroopers and the other airspeeds were increased accordingly to cover the airspeed range for the test requirements. As previously stated in the test procedure, all paratroop drops were made at the flap angle necessary to maintain a 0 to 2° deck angle, and using an "A" frame at each paratroop door to project the dummy into the slipstream simulating a "live" paratrooper. The single simultaneous dummy drops from each paratroop door indicated that the dummies cleared the door very well, and dropped away into the slipstream. The parachute bag separated, and rose up along side the fuselage with the parachute streaming from the bag, but photographic coverage did not indicate brushing of the fuselage by the parachute. However, due to camera angles and lack of color contrast between the parachute, and airplane fuselage, the fuselage was coated with a substance that would rub off on any objects that brushed it to positively prove whether

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parachutes brushed or not. The parachutes were identified prior to this test, examined, and the dummies were dropped. Post-flight examination of these parachutes did not reveal any indication of fuselage contact, and these parachutes were to be forwarded to the U. S. Army laboratory for further examination.

Stick dummy drops were made with the same airplane configuration, and with much the same results. The dummy lateral separation appeared to be satisfactory, there did not appear to be cross-over, and each parachute static line and bag appeared to rise up high on the fuselage and stabilize in this position. Recovery of the static lines presented no problem as the lines moved forward with out any large oscillations, and were pulled in through the paratroop door. Here again the parachutes did not appear to brush the fuselage. The paratroop jump platform was not evaluated as no live jumps were made during these tests. The static line retriever winches operated satisfactorily on these tests.

One dummy was intentionally "hung up" and retrieved through the left hand paratroop door. The dummy recovery was smooth as the dummy stabilized away from the fuselage, and did not strike the fuselage until the contact at the paratroop door. The "hung dummy" is recognizable as the static line of the "hung dummy" goes

to the aft lower edge of the paratroop door and remains there, but all other static lines float up to the top aft door corner and stabilize. Installation of the retriever bar required one man, and was not difficult or time consuming.

4.1.3 Exit From Ramp Only. Individual and stick drops were made from the cargo ramp with the petal doors in the intermediate position (38°) at 120, 135, and 200 KCAS, and with the petal doors in the full open position (60°) at 130 KCAS. Flap position was that flap angle necessary to give a 0° to 2° deck angle at the test airspeed.

On the individual dummy drops, the dummies cleared the ramp well, dropping down and aft with the parachute bags rising up rapidly as the parachutes separated from the bags. Here again it was extremely difficult to determine from the photographic coverage if the parachute canopies brushed the underside of the fuselage hayloft or not. The underside of the fuselage was taped, grease was rubbed on each tape strip, and dummies were dropped from the ramp. Inspection of the parachutes after the test did not indicate any brushing as no grease stains were found on the parachutes. The 15ft. static line oscillates wildly in the turbulent air aft of the fuselage, and at times tended to hang up on the petal door aft lock or the aft anchor cable support as the static line was retrieved. No dummy retrieval attempts were made with the petal doors in the intermediate position (38°).

Dummy stick drops of seven dummies were made from the ramp. The dummies cleared the ramp, and the parachute-bag separation was similar to the individual drops. The parachute static lines again rose up high against the underside of the fuselage bayloft, and then whipped about in a circular motion in the turbulent air. There were no incidents of parachutes being fouled by the parachute static lines on any of the stick drops. Recovery of the parachute static lines was accomplished, but the static line retriever winch cable whipped about the cargo compartment due to the whip of the static lines as they were being retrieved. This problem would not be as pronounced in the retrieval of a greater number of static lines due to the increased weight and drag of the lines and bags.

Two dummy retrievals were made from the ramp in the cargo drop configuration as specified in Section 4.1.1 of this report. The first dummy retrieval was made using a 140 pound rope head dummy at 130 KCAS. The retrieval of the dummy was started immediately after the stick drop was completed, and the dummy struck the right petal door several times, (the static line was attached to the L/H anchor cable) and the fuselage and ramp. Photographic coverage indicated that a paratrooper could have suffered severe injury on a recovery such as this. In order to investigate the ramp retrieval operation more fully, an anthropomorphic dummy was procured and instrumented with accelerometers in three axes. In addition, and as a result of the above test, a retrieval bar (similar in principle

to the bar presently furnished in the Paratroop Kit for use during retrievals from the troop doors) was incorporated in the rear R.H. ramp area at approximately F.S. 1438. This bar was slightly aft of the end of the ramp, located approximately seven feet high, and projected laterally inboard sixteen inches. In final form, it would be designed to fold outboard into the fuselage for clearance. In usage the anchor cable, retriever cable, and trooper's static line ride over the bar so that final position of the trooper is essentially vertical. The dummy was pushed from the ramp, and approximately four seconds later the dummy experienced "G" loads similar to a moderately hard parachute opening shock load with peak recorded accelerations of 9.0G. The dummy struck the airplane structure six times prior to being retrieved up to the ramp edge and peak accelerations of 2.10 G's to 9.91 G's were recorded. The dummy struck the edge of the ramp twice during the lifting of the dummy over the ramp edge with a peak acceleration of 10.34 G's recorded. Physiological analysis of these data indicate that head, arm, and leg injuries would be anticipated in a paratrooper retrieval under these conditions. It is felt that had proper techniques been devised and used, the dummy strikes against the ramp edge could have been prevented. Both of these tests were performed with the petal door strakes on and the petal doors in a 60° position (149.5 inches door tip to door tip). No tests were done after the petal door strakes were removed.

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4.1.4 Simultaneous Exit From Ramp And Paratroop Door. Three dummy drops were made with the paratrooper doors, and cargo doors open. The first dummy drop was 1 rophead dummy out the right hand paratroop doors with the airplane configured as in the Paratroop Drop Configuration (paratroop door and cargo ramp), as specified in Section 4.1.1 of this report. The petal doors were in the intermediate (38°) position. The dummy cleared the right hand door, and dropped away, but the parachute bag rode up, and the parachute canopy brushed against the right hand petal door leading edge, and a 12 inch slit was torn in the lip of the parachute canopy. The petal door leading edge was not damaged. Standard 15 feet static line was used on this test. Airspeed was 130 KCAS and flap position was 65%.

The second dummy drop, made with the same airplane and dummy configuration, was one rophead dummy out each paratroop door, and one off the ramp simultaneously at 130 KCAS, flaps 65% down. All dummies cleared airplane doors, dropped away and parachutes of dummies from paratroop doors appeared to brush fuselage but did not snag on petal doors. The parachute of the dummy dropped from the ramp did not appear to brush the

fuselage. The dummy spacing behind airplane appeared to be satisfactory, and there was no parachute damage. Again these dummy drops were made with the standard 15 foot static line and T-10 parachute.

Analysis of the previous dummy drops with the paratroop and cargo doors open indicate that the 15 foot static line places the parachute bag just forward of the petal doors leading edge as the parachute separates from the bag. A standard 4 foot static line extension was procured and sewn to the 15 foot static line to increase the total static line length to 19 feet. The object was to try to move the bag aft of the petal door leading edge while the parachute was separating from the parachute bag. The third dummy drop in this configuration was one rope head dummy out each paratroop door, and one off the ramp simultaneously at 130 KCAS, 80% flaps. The dummies cleared the airplane satisfactorily, but the right door dummy parachute bag still containing the parachute, hit the right hand petal door, and made a sizable dent in it. There were no visible indications of other damage to the parachute or the airplane. However, examination of the 3 parachutes after landing revealed damage to all parachutes in the apex area.

4.2 Extraction Line And Parachute Tests

4.2.1 Dummy Parachute Pack Ejections - The dummy parachute pack ejections are summarized below in Table 4-1.

TABLE 4-1

DUMMY PARACHUTE PACK EJECTIONS

<u>PARACHUTE SIZE</u>	<u>NO. OF PARACHUTES</u>	<u>AIRSPEED V_c -KCAS</u>	<u>FLAPS %</u>
15' D ₀	1	120	76
15' D ₀	1	155	60
15' D ₀	1	175	45
15' D ₀	1	192	35
22' D ₀	1	175	45
28' D ₀	2	155	60
32' D ₀	2	120	76
32' D ₀	2	192	35

The results of these tests were satisfactory for each extraction parachute tested. All parachutes swung freely from the pendulum attachment, cleared the ramp lip, and made no contact with the aircraft structure.

4.2.2 Minimum Extraction Line Length Determination - The minimum extraction line length tests are summarized below in Table 4-2.

TABLE 4-2

MINIMUM EXTRACTION LINE LENGTH TESTS

EXTRACTION LINE LENGTH - FT.	ATTACHMENT POINT FUS. STA.	AIRSPEED V _c - KCAS	FLAPS %
60	1149	120	76
↓	↓	135	65
↓	↓	145	40
↓	↓	↓	50
↓	↓	↓	60
80	1149	175	45
↓	↓	192	45
105	838	120	75
↓	↓	135	65
↓	↓	150	60
↓	↓	175	45
↓	↓	200	33
145	586	120	76
↓	↓	135	65
↓	↓	150	60
↓	↓	175	45
↓	↓	200	33

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The results of the 60' line tests were totally unsatisfactory. In this configuration, the line was continually twisting and fraying. The 80' line produced better parachute characteristics and the extraction line remained in the center of the aft cargo opening. The line was stable and evidenced no twisting tendencies, and the tests were considered satisfactory. During the testing of the 105' and the 145' lines, there was some contact between the extraction line and the aft fuselage structure in the general area of the tail cone. This occurred predominately for airspeeds below 150 KCAS. However, this occurrence was mutually agreed by contractor and SPO personnel to be minor and due to the small (4' Dia.) parachute being towed. The results of the 105' and 145' line were therefore considered satisfactory. The minimum line length criteria resultant from these tests was a line length which placed the connection link between the extraction line and parachute at least 23.5 feet aft of the tail cone. This criteria was adhered to for the tow tests, but amended during the course of testing.

- 4.2.3 Extraction Parachute Tow Tests. A summary of the results of the extraction parachute tow tests plus extraction forces measured during the airdrops is shown by Figures 4-1, 4-2, 4-3, 4-4, and 4-5. Additionally, time history data for the tow tests are presented in Figures C-1A through C-17A in Appendix C. No adverse effects on the airplane were noted during the tow tests. The time histories show that the only airplane response was a slight nose down pitching

moment and a reduction in airspeed which was corrected by elevator input and power application. It was observed that the resultant extraction parachute forces were lower than predicted forces during the initial testing. The maximum difference between predicted and actual extraction forces was approximately 20%. In an effort to improve this situation, the extraction lines were increased from 80' to 100' in length. This resulted in a slight increase in the extraction forces measured. Additionally, somewhat improved parachute characteristics were noted with the longer lines. The increased line length precipitated a change in the minimum extraction line length criteria from 23.5' to 33.5' aft of the tail cone. Table 4-3 presents the criteria observed for the remainder of the program.

TABLE 4-3

MINIMUM EXTRACTION LINE LENGTHS

<u>EXTRACTION LINE LENGTH-FT.</u>	<u>MOST FORWARD USEABLE FUSELAGE STATION</u>
80	1260
100	1020
120	780
140	540

It should be noted that a 140' line length would be satisfactory for use with cargo located at any position in the cargo compartment.

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Additionally, if line lengths of different sizes are linked together, they should be chosen such that the metal connector link between them is located outside the airplane. This procedure would preclude damage to the aircraft interior and associated structure resultant from extraction line whipping action. Damage of this nature did occur during the airdrop portion of the program (Flight 137 drop number 35) during which two 60' and one 20' line lengths were pieced together to form a 140' extraction line length.

Jet blast effects were investigated by cutting back the inboard engines during the tow tests. Since this procedure produced no positive results and only served to complicate the maneuver, it was not employed on the following tow tests or airdrops.

The results of the tow tests indicate that the standard extraction parachutes (15'D₀, 22'D₀, and 28'D₀) are satisfactory for safe use up to 150 KCAS. However, due to the parachute failures experienced during the cargo airdrops, the 28'D₀ extraction parachute is not felt to be strong enough for use above 140 KCAS. The 32'D₀ fist ribbon parachute and the 24'D₀ reinforced ring slot parachute are felt to be strong enough for safe utilization at airspeeds up to 170 KCAS and 190 KCAS respectively. Use of a reefed parachute at speeds above its unreefed airspeed limit is not advisable since a malfunction of the reefing line could lead to full inflation of the parachute. This type of incident occurred

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during a tow test of the 32'D₀ parachute at 198.5 KCAS. A miscalculation of the reefing line length lead to full inflation of the parachute which precipitated a failure in the extraction parachute risers. The clevis fitting at the end of the extraction line was then thrown forward into the airplane causing minor damage to the rudder, and rudder boost package fairing (tail cone). It is realized that the 32' and 24' parachutes are non-standard items in the USAF ADS inventory. However, based upon the parachutes supplied to the contractor at the El Centro NAF, there exists no safe standard extraction parachute capability at speeds above 150 KCAS.

4.3 Single Package Airdrops

4.3.1 Airplane Response. Data obtained from the single package airdrops is presented in time history form by Figure D-1A through Figure D-40G in appendix D.

4.3.1.1 Cargo Drop Weight Effects. A summary plot of incremental angle of attack, pitch rate, and pitch acceleration for the single package drops is presented in Figure 4-6. Vertical acceleration data obtained at fuselage stations 277, 932, and 1637 is depicted in Figure 4-7. The above parameters plotted versus cargo drop weight demonstrate that the effect of increasing the drop weight is to increase each of the above response parameters. Furthermore, up to the maximum test drop weight of 35,700 pounds, no design limits were exceeded and the pitch rate build-up was not beyond the control of the pilot. These results indicate that the C-141A has capabilities to airdrop unit loads in excess of 35,000 pounds provided a reliable 1.0g extraction system can be obtained for heavy drop weights.

4.3.1.2 Extraction Ratio Effects. The primary effect on airplane response is that of extraction ratio (the ratio of extraction force to the cargo drop weight). Data from drops number 13,

14R, and 15 are plotted in Figure 4-8 to demonstrate the typical effect of extraction ratio on airplane response. These data show that the effect of decreasing the extraction ratio is to increase the incremental angle of attack, incremental load factor, and pitch rate. For extraction ratios below approximately 0.8g, the effect becomes significant and greatly increases the airplane response. Extraction ratios greater than 1.5g would produce roller speeds in excess of design limits.

R. H. restraint rail release forces measured during the airdrops were in most cases higher than the release loads set in the release mechanism. For example, the release force for drop number 22 (34,100 pounds) was almost 100% higher than the release force set (17,500 pounds). The release forces measured during the airdrops are contained in Table A-3 in Appendix A. The restraint rail lock setting table was revised midway through the program, and further revised at the end of the program by combining Category I and Category II test data. This final revision is felt to be satisfactory for restraint rail lock settings on the C-141A, and is shown in Table A-5 in Appendix A.

Since extraction ratios are totally dependent upon the overall extraction system, the reliability of this system is of prime concern. Section 4.5.1 more fully discusses the extraction system deficiencies encountered during the test program.

However, it should be noted here, that extraction system malfunctions or failures coupled with modular platform under-surface damage will produce low extraction rates which in turn increase the airplane response. During drop number 22 (a failed extraction system drop) damage to the modular platform was so severe that damage to the inboard roller sections on the ramp occurred. In addition, the resultant airplane response under these conditions was such that full nose down elevator was required to check the airplane pitching motion. Platform damage could lead to prolonged retardation of platform movement which would lead to serious if not impossible controllability requirements under certain drop conditions.

4.3.1.3 Airspeed Effects. Figure 4-9 depicts the effects of airspeed on airplane response. The data plotted are taken from drops number 11, 30, 31, and 28. These data indicate the effect of increasing airspeed is to decrease the incremental angle of attack, and increase the incremental load factor and pitch rate.

- 4.3.1.4 Airplane Center of Gravity Effects. Airplane center of gravity effects are depicted by Figure 4-10. The data plotted are from drops number 25 and 22R. These data show that the effect of moving the c.g. aft is to decrease the incremental angle of attack, incremental load factor, and pitch rate.
- 4.3.1.5 Gross Weight Effects. Figure 4-11 shows the effect of airplane gross weight on the response parameters. The data, corresponding to drops number 17 and 32, indicates that the effect of increasing the gross weight is to increase the incremental angle of attack, and decrease the incremental load factor and pitch rate.
- 4.3.1.6 Altitude Effects. Altitude effects are depicted in Figure 4-12. Drops number 28 and 33 are plotted. Elevator input was employed on drop number 33. Taking into account the fact that this elevator input would reduce the resultant airplane response, the data indicates that incremental angle of attack and incremental load factor are increased with an increase in drop altitude. The pitch rate data is inconclusive since the elevator input caused the pitch rate to be checked before the load c.g. reached the ramp lip.

4.3.1.7 Flap Effects. Test results are lacking to fully depict any effect of flap deflection on airplane response. After review of the individual drop time history data, it is felt that the incremental airplane response is not affected to any significant degree by changes in flap deflections. However, flap deflection does have an effect on the overall ADS maneuver. For a given speed/gross weight combination flap deflection greatly influences the 1.0g trim attitude. Figure 4-13 depicts the change in 1.0g trim attitude due to flap deflection. Figure 4-14 presents an airspeed-gross weight-flap deflection schedule for a 2° nose up deck angle. Flap deflection also influences the $1.2V_S$ speed as shown in Figures 2-7 and 2-8. With flap deflections between 0% and 88%, airdrops can be performed from $1.2V_S$ to 200 KCAS, however the upper speed limit is reduced to 185 KCAS when 100% flaps are used.

4.3.1.8 Negative Deck Angles. Negative deck angles of up to -3° (drop number 36) were encountered during testing. No adverse effects on airplane response were noted due to negative deck angles. However, negative deck angles are not advisable since in the event of an extraction system failure, a negative deck angle would impart some forward acceleration on the load. In addition to this, a negative deck angle reduces the overall extraction ratio slightly.

4.3.1.9 Pilot Response Effects. The effects of pilot response are dependant upon how soon after load release and at what rate the elevator is input. In general, the test results indicate that pilot corrective action reduces the airplane response parameters. This reduction in airplane response by introducing pilot action also serves to increase the horizontal stabilizer loads and in general the cargo ramp loads. Elevator effectiveness is demonstrated by drop number 22 during which a failed extraction system produced a very low extraction rate therefore creating the need for pilot response. The pitch rate was checked and reduced by 46% before the load c.g. reached the ramp lip. On normal airdrops (nominal 1.0g extraction rates) pilot response is not necessary up to 35,000 pounds drop weights, however, for airdrops of unit loads above 20,000 pounds, it is suggested that the pilot dampen the airplane pitching motion in anticipation of an extraction system failure.

4.3.2 Airplane Loads. Airplane loads experienced during ADS System Tests are presented in time history form in Appendix D (Figures D-1A through D-40G). Summary plots of a given load versus cargo drop weight are contained as noted in this section of the report. With the exception of the petal door actuator loads, no load measured during the test program exceeded design limits.

4.3.2.1 Petal Door Actuator Loads. Incremental petal door loads due to cargo extraction were not anticipated prior to the ADS System Tests. However, incremental door loads were found to be severe during testing and resulted in net petal door loads equal to or exceeding design limit load in compression (10,000 pounds) during drops number 22, 27, and 32. Extraction system failures occurred during drops number 22 and 32, and drop number 27 was a high speed forward c.g. drop. In each of these drops, the petal doors were equipped with the 13.5' strake. The incremental loads are apparently due to the fact that as a package exits the ramp it creates a venturi effect between the petal doors. This effect produces higher airflow velocities along the inside of the petal doors creating a negative pressure surge which precipitates the incremental compressive loads reacted at the petal door actuator rod ends.

Figure 4-15 represents a summary of the net petal door actuator loads plotted versus cargo drop weight. These data do not reflect any positive effect of drop weight on the petal door loads. However, review of each individual drop does indicate a combined effect due to package size (overall length and height), extraction ratio, airspeed, and flap setting. The larger sized packages apparently intensified the venturi effect creating greater negative pressure surges. The reduced extraction rates increased the overall airplane

response thus producing larger inertia loads on the petal doors. In addition to this, the package remained between the petal doors for a longer period of time and the platform tip-up was greater for the reduced extraction rates. Airspeed and flap deflection influence the petal door loads predominantly in respect to the trim loads prior to drop. Increasing airspeed increases the petal door trim loads, and increasing the flap deflection decreases the petal door trim loads. At 200 KCAS with less than approximately 30% flaps, the petal door trim loads equaled or exceeded design compression limits with the petal doors in the 13.5' strake configuration.

Additional flight tests were initiated concurrently with the ADS System Tests to determine:

- (1) If the removal of all or any portion of the petal door strake would reduce the combined flight loads and airdrop passage loads to below design limits,
- (2) If there was any favorable or adverse effect of the proposed ramp air deflectors on the combined flight and passage loads and,
- (3) If there was any favorable or adverse effect of reducing the petal door opening position on the combined flight and passage loads.

These tests are summarized in Table 4-4.

TABLE 4-4
EFTR PETAL DOOR TESTS

<u>PETAL DOOR POS. - DEG.</u>	<u>STRAKE LENGTH</u>	<u>RAMP CONFIG.</u>	<u>CARGO AIRDROPS</u>	<u>DROP NUMBER</u>
60	13.5'	RAMP SIDE PANELS	OFF	NO
38	13.5'		↓	
60	5.0'		↓	
38	↓		ON*	
60	↓		↓	
38	0		↓	
60	↓		OFF	
38	↓		↓	
55	↓		ON*	
55	↓		OFF	NO
60	↓		OFF	YES
55	↓		OFF	22R1
55	↓		ON**	22R2
60	↓		ON**	22R3
	↓		ON**	22R4

The results of these tests are summarized for trim flight conditions in Figures 4-16 through 4-21. Steady sideslip results are summarized in Figures 4-22 through 4-27. Table 4-5 represents the effects of petal door position and ramp air deflectors on petal door passage loads. Tabulated data for each trim and sideslip point flown is contained in Figures E-1A through E-5A in Appendix E.

Dynamic structural petal door loads were evidenced during testing. These door buffet loads during flight were of basically two frequencies

- * Plywood side panels
- ** Rubberized side panels

3 cps and 20 cps , with slight variations due to different flight conditions. The peak-to-peak load amplitude of the two frequencies varies with flight conditions and airplane configuration in a range from 2000 to 4500 pounds. This peak-to-peak load range is obtained from the "MAX" and "MIN" actuator loads shown in the tabulated data of Figures E-1A through E-5A. Unless specifically labeled as a "peak" load, the data herein is presented in terms of the average load level as has been the case in all previously published flight test data. The time history petal door loads data are also presented in terms of the average load level with the exception of the actual peak load.

Complete strake removal demonstrated a 50% reduction in the most critical trimmed flight petal door loads. Strake removal also reduced the most critical compressive petal door loads in sideslip to 10% of design limits. This total load is obtained by adding the average load (8,450 pounds) of Figure 4-25 (for 88% flaps, leeward actuator at 160 KEAS, ramp side panels off) to the buffet load of 1,850 pounds (Figure E-2A in Appendix E) for the same flight conditions. The passage loads appear to be reduced with strake removal, but this is inconclusive since the ARAIV was not dropped under normal conditions with the petal doors in the 13.5' strake configuration. Although other influences are present, the effect of strake removal on the net petal door loads during airdrop

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is demonstrated by a comparison of the results of drop number 12 and drop number 28. Drop number 28 (198.5 KCAS and a no strake) produced net petal door loads approximately equal to those of drop number 12 (142.5 KCAS and 13.5' strake), yet there was over 55 knots difference in airspeed.

Reduction in the petal door opening position from 60° to 55° lowered the trimmed flight loads by approximately 12%, but at the expense of a slight increase in incremental door loads during airdrops. The change in door position did not change the door loads during sideslip to any significant degree. Film coverage obtained during these tests indicates that the forward latch cover of the L.H. petal door did not move inside of its 55° ground-rigged position even under the most severe flight conditions for deflecting the door inward. This indicates that a further reduction in door opening (possibly 1°) may be available for compression load relief.

The ramp side panels were found to have no significant effect on the trimmed flight petal door loads. They did however, aggravate the most critical compression loads during sideslip. Although insignificant, there was a slight tendency for the ramp side panels to increase the incremental petal door loads during airdrops.

Strake removal introduced a minor problem in that design limit loads in tension for the 38° door position were exceeded in maximum steady sideslip for flap deflections greater than 50% and airspeeds above

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approximately 180 KCAS. This condition is indicated in Figure 4-26 by adding approximately 1500 pounds dynamic tension load (Appendix E data) to the average load shown. However, during the Aerial Delivery System Tests, it became apparent that the 38° door position would not be used unless a three stick paratroop airdrop capability was developed. Therefore, no additional tests for the 38° door position were performed.

TABLE 4-5

EFFECTS OF PETAL DOOR POSITION AND RAMP AIR DEFLECTORS

ON PETAL DOOR PASSAGE LOADS

FLIGHT NO	168	170	172	173
FLIGHT DATE	8-23-65	8-25-65	8-27-65	8-31-65
DROP NO.	22R1	22R2	22R3	22R4
GROSS WEIGHT-LBS	193,800	173,500	179,300	179,400
C.G. % MAC	33.7	32.7	32.9	32.7
AIRSPED KEAS	153.5	154.5	152.5	153.0
ALTITUDE FT.	5,000	5,000	5,000	5,000
FLAPS %	60	60	60	60
RAMP AIR DEFLECTORS	OFF	OFF	ON	ON
PETAL DOOR POSITION DEG.	60	55	55	60
CARGO TYPE	ARAAV	ARAAV	ARAAV	ARAAV
CARGO LENGTH-FT.	24	24	24	24
CARGO WEIGHT-LBS.	35,050	19,700	19,900	19,650
PETAL DOOR ACTUATOR LOAD* (LBS)				
RH-PEAK	4,700	3,860	4,400	5,760
RH-TRIM	N.A.	1,350	1,200	2,550
RH-PASSAGE LOAD	N.A.	2,510	3,200	3,210
LH-PEAK	5,160	4,490	4,800	5,740
LH-TRIM	2,450	1,230	1,380	2,790
LH-PASSAGE LOAD	2,710	3,260	3,520	2,950

* Loads tabulated above are compression loads.

4.3.2.2 ADS Link Loads (Spider Arm Loads). Figure 4-28 presents a summary of the spider arm loads plotted versus cargo drop weight. These data indicate that the spider arm loads are increased as the cargo drop weight is increased. Reduced extraction ratios also increase the spider arm loads. An increase in airplane gross weight apparently reduces the spider arm loads, while increasing airspeed serves to increase these loads. Flap effects are insignificant, but pilot response effects tend to increase the spider arm loads since they reduce the load relief available due to airplane pitching motion. No spider arm loads obtained during the ADS System Tests were beyond the design limit load of 38,700 pounds tension.

4.3.2.3 Cargo Ramp Loads. Cargo ramp actuator and hinge loads are summarized in Figure 4-29. Net loads are presented in each case. Incremental loads for the ramp actuator are also presented for each drop in which a time history of the loads was performed. Design limit loads were not exceeded for any of the above ramp components during the ADS System Tests.

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Modifications were made to the ramp actuator hydraulic system during the course of testing. The reason for this was the fact that the ramp actuators did not produce sufficient force to hold the ramp in the airdrop position at 200 KCAS. These modifications resulted in an approximate change in system pressure to the actuators from 500 psi to 1000 psi, and was sufficient to keep the ramp down at 200 KCAS. Review of the time history data shows that after the above change was made, there was a post drop compressive load in the ramp actuators greater than their original trim load prior to drop. Review of the time history data prior to this change (prior to Flight 153) shows no such post drop load. The time history data also indicates that prior to the modification of the hydraulic system, the incremental tension loads produced as the cargo c.g. passed over the actuators was equal to or greater than the incremental compressive spring-back load after the cargo c.g. passed the actuators. After system modification, the compressive spring-back loads became larger. The ramp actuator loads were affected predominantly by airspeed changes since at higher speeds, more actuator force was required to keep the ramp in the airdrop position. The resultant ramp actuator loads remained within design limits during the test program.

The ramp hinge total side load results were inconsistent with drop weight, airspeed, extraction ratio, etc. Bank angle and sideslip appeared to exert a slight tendency to increase the total side load on the ramp hinge. Both the drag and vertical loads on the ramp hinge were increased as the cargo drop weights were increased. Reduced extraction ratios also produced higher hinge loads as did elevator input.

4.3.2.4 Fuselage Loads. Net and incremental vertical bending loads measured at fuselage stations 1048 and 1568, are summarized in Figure 4-30. The net bending loads on the aft body displayed a tendency to increase in a down bending manner as the cargo drop weights were increased. In general, higher speeds and reduced extraction ratios also increased the net down bending loads. Elevator inputs were load relieving as far as the net fuselage bending loads were concerned. The effects of nose down elevator inputs were to produce large up bending incremental loads which resulted in net loads closer to zero.

The incremental loads at fuselage station 1048 were in a down bending direction due to the cargo c.g. exerting its greatest influence as it reached the ramp lip. The incremental loads at fuselage station 1568 were in an up bending direction due to the fact that in most cases the

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tail loads were of a relieving nature. None of the fuselage loads obtained exceeded design limits.

4.3.2.5 Horizontal Stabilizer Loads. Net and incremental shear and bending loads at H.B.L. 44L are summarized in Figure 4-31. Horizontal stabilizer trim loads prior to airdrop were in a down load direction. As the airplane pitched nose up due to cargo being extracted, the angle of attack of the stabilizer changed such that smaller down loads were attained. In some cases where nose down elevator inputs were introduced, the net load became an up load on the horizontal stabilizer. Increasing the cargo drop weight, decreasing the extraction rate, and introducing nose down elevator inputs all served singularly or in combination to produce larger up tail load increments which resulted in net horizontal stabilizer loads lower than their trim values prior to drop.

Although not a requirement under Reference (1), a working measurement of torsion at H.B.L. 44L was achieved during the course of the program. A summary of the torsion loads measured is presented in Figure 4-32 for the drops during which the instrumentation was working. These results are inconsistent due to the variation in elevator inputs, but are useful in spotting tail loads on a design envelope. Horizontal stabilizer loads measured during the test program did not exceed design limits.

4.3.2.6 Vertical Stabilizer Net Loads. Vertical stabilizer net bending loads measured at V.S.S. 345 were of an insignificant value throughout the test program. These loads are presented only on the time history data. Sideslip was the only item affecting vertical stabilizer bending, and for the airdrop tests, sideslip was kept to a minimum.

4.3.2.7 Pitch Trim Actuator Loads. A summary of the pitch trim actuator loads is presented in Figure 4-33. The net pitch trim actuator loads displayed a slight tendency to increase with drop weight. The effect of reduced extraction ratios was to increase both the net and incremental loads. The forward c.g. drops displaying higher loads than the aft c.g. drops. Elevator input also increased the net and incremental pitch trim actuator loads. The pitch trim actuator loads did not exceed allowable limits during the test program.

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4.4 Sequential Airdrops

4.4.1 Airplane Response. Airplane response parameters are presented in time history form in Figures F-1A through F-8N in appendix F. With the exception of drops number 40 and 40R, the sequential drops displayed no significant changes in the resultant airplane response. The airplane response in general was of a lesser magnitude due to the effects of increased gross weights and pilot effort. Drops number 40 and 40R both demonstrated that full elevator was required to maintain control of the airplane under the influence of a failed extraction system. However, in each case, the pitch rate was checked prior to the cargo c.g. reaching the ramp lip. Drop number 40R resulted in greater airplane response due to the fact that the extraction system failure occurred on the second load which was located at a forward c.g. position. Both drops produced severe platform damage which resulted in a further retardation of the platform movement. However, no rollers were lost during these drops even though some damage was sustained.

The results of the sequential airdrops indicate that a time delay of approximately 2 seconds between successive loads is sufficient in terms of pilot and airplane response. It was possible for the pilot to hold the airplane in its proper attitude (0° to 2° X.U.) as the airplane c.g. shifted under

the influence of cargo extraction. As an example of this c.g. shift, reference drop number 42 during which the airplane c.g. shifted from 23.3% MAC prior to drop to 11.3% MAC during the drop to 20.3% after the drop.

4.4.2 Airplane Loads. The airplane loads experienced during the sequential airdrops were not significantly different in magnitude or nature from those obtained during the single package drops. Time history data pertaining to these drops are presented in Figures F-1A through F-8N in Appendix F. During drop number 40, the left hand petal door actuator reached a peak load of 11,300 pounds compression (113% design limit) and the right hand actuator reached 11,700 pounds compression (117% design limit). However, on drop number 40R which produced more critical forcing functions on the petal doors than did drop number 40, the peak petal door loads obtained for this stroke off configuration were only 76% of design limit for the L.H. door and 63% of design limit for the R.H. door. During drop number 40R, N_z @ F.S. 952 reached a peak value of 2.1g (105% design limit). Although wing loads were not available, the flight conditions for this 5% exceedance of load factor limit preclude the possibility of wing loads exceeding design limit load levels.

4.5 Aerial Delivery System Deficiencies and Limits

4.5.1 Deficiencies. Test results show that at the present time,

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there exists no reliable extraction system for use with 35,000 pound unit loads. Table 4-6 lists the extraction system malfunctions encountered during the ADS Systems Tests.

TABLE 4-6
Extraction System Malfunctions
And Failures

<u>Flt. No.</u>	<u>Drop No.</u>	<u>Airspeed KCAS</u>	<u>Drop Wt. Lb.</u>	<u>Extr. Parachute No/Size</u>	<u>Remarks</u>
121	18	152	35,540	2/28'D ₀	One parachute failed
129	26	120	23,440	2/28'D ₀	One parachute failed to open.
159	22	155	34,400	2/28'D ₀	Premature extraction line guillotine.
144	32	153	35,335	2/28'D ₀	Clevis failure
149	40	150	34,650 35,360	2/28'D ₀ 2/28'D ₀	Extraction line failure on first load-second load not dropped
175	40R	150	35,390	2/28'D ₀	Both extraction parachutes failed on second load.

Since the total number of 35,000 pound drops in the program was 15, this gives an overall system malfunction rate of 33 1/3%. The failure of drop number 22 resulted in a change in airdrop rigging procedure. The clevis failure of drop number 32 resulted in changing the clevis material from aluminum to steel. An old or understrength line combined with the use of an improper connecting link (clevis) resulted in the extraction line failure of drop number 40. Appropriate measures have been taken to preclude the

possibility of this combination of events happening again. However, a sufficient number of drops were not performed with the modified extraction system to prove reliability. It should be acknowledged that in its present configuration, any single failure (chute, clevis fittings, extraction line, etc.) can cause a total loss of extraction force.

The 28'D₀ ring slot extraction parachute is another deficiency in the overall system. The airdrop test results indicate that this parachute is inadequate because of strength properties at speeds above 140 KCAS. It must be acknowledged that contractual requirements to airdrop unit loads up to 35,000 pounds are premised on a nominal 1.0g extraction rate, Reference (3). It has been pointed out to the SPO that clustered 22'D₀ parachutes could be satisfactorily employed to extract unit loads up to 25,000 pounds at 150 KCAS. Another alternative indicated by the test results is the usage of either the 32'D₀ or 24'D₀ non-standard parachutes for 35,000 pound class loads. The final alternative is to redesign the 28'D₀ parachute with strength properties sufficient to insure reliability at airspeeds of at least 160 KCAS. Even if this was done, there would still be no capability of standard extraction parachutes above 150 to 160 KCAS. The only extraction parachutes demonstrated to be satisfactory above 150 KCAS were the 32'D₀.

first ribbon and the 24'D₀ reinforced ring slot parachutes. These two parachutes are felt to be satisfactory for use in the configuration and speed range noted in Section 4.2.3. Further testing and development of an extraction system capable of extracting unit loads up to 35,000 pounds at 200 KCAS is needed.

The present ADS modular platform is felt to be of insufficient strength to be used safely on unit loads above 25,000 pounds. Test results showed damage to the platforms when used with 35,000 pound loads extracted at rates as high as 0.8g. This platform damage can become quite severe with reduced extraction rates and leads to the possibility of a "hung" load during an ADS maneuver. Platform damage under low extraction rates aggravates the situation since it precipitates a further retardation of platform movement due to interaction between the rollers and platform under-surface. In the case of drop number 22, platform damage was sufficient to rip out the last two rollers of each inboard roller section on the ramp. It is the contractors understanding that the present modular platforms are designed for a maximum unit load of 28,000 pounds extracted at a nominal 1.0g rate. Platform modifications must be accomplished before any additional testing of unit loads above 25,000 pounds is initiated. The two alternatives for platform modification appear to be: (1) steel reinforcing strips in the area of

roller contact and (2) a new platform designed for unit loads of 35,000 pounds or higher. When the above is accomplished, the 25,000 pound unit load limit can be lifted, and pending extraction parachute development, further testing of 35,000 pound class loads can be considered. Under the influence of heavy drop weights and low extraction rates, severe damage and/or loss of rollers can be sustained (reference drop number 22 as a typical example). It should be acknowledged that for the nominal 1.0g extraction rate case, which is the design criteria accepted by the contractor and the SPO, the present C-141A roller conveyor system is adequate for aerial delivery of unit loads up to 35,000 pounds. All roller failures experienced during air drop testing were a "third level failure". First, the extraction system failed, and then the resultant low extraction rates produced platform under-surface damage followed by failed or damaged rollers. Structural redesign and/or beef-up of the rollers does not seem reasonable for two reasons. First, it seems unwise to increase the basic airplane weight for the small percentage of 35,000 pound air drops made operationally. Secondly, the test results do not positively indicate that the rollers would have failed had the platforms held together. Positive isolation of the roller capabilities can be achieved only during a follow-on airdrop program utilizing a platform of

strength sufficient to withstand the loading produced by a 35,000 pound load extracted at a nominal 0.25g. The contractor does not ignore the possibility of modifications to the roller conveyor system. However, these modifications would be considered only if follow-on testing positively indicates they are needed.

- 4.5.2 ADS Limits. Based on the results of the ADS System Tests and the present extraction system deficiencies, it is felt that the maximum unit cargo weight airdropped from the C-141A should not exceed 25,000 pounds because of insufficient platform strength. In addition, the airspeeds employed should be between 150 KCAS and 130 KCAS (or $1.3V_S$, whichever is larger). A joint contractor/SPO meeting (18 November 1965) resulted in further limitations due to extraction parachute deficiencies. It was agreed to restrict the use of the 28'D₀ extraction parachute to 130 KCAS with a unit drop weight limit of 15,000 pounds at that speed. In addition, it was agreed that the 15'D₀, reefed 22'D₀, and unreefed 22'D₀ extraction parachutes could be used up to 150 KCAS. This would result in a maximum unit drop weight of 16,000 pounds for the unreefed 22'D₀ parachute at 150 KCAS. It should be noted that the above limits are due predominantly to extraction system deficiencies, and that the C-141A has demonstrated full airplane capabilities to airdrop unit loads of 25,000 pounds up to 200 KCAS, and to airdrop unit loads of 35,000 pounds at speeds up to 160 KCAS.

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EXTRACTION PARACHUTE FORCE VS. AIRSPEED

15' D. RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ ~ 80' LINE LENGTH @ F.S. 1271

◊ ~ 140' LINE LENGTH @ F.S. 1172

▽ ~ 140' LINE LENGTH @ F.S. 526

SYMBOLS - AIRBORNS

■ ~ 100' LINE LENGTH

▼ ~ 120' LINE LENGTH

◆ ~ 140' LINE LENGTH

▽ ~ 100' LINE LENGTH, PARACHUTES REEFED TO 12' DIA

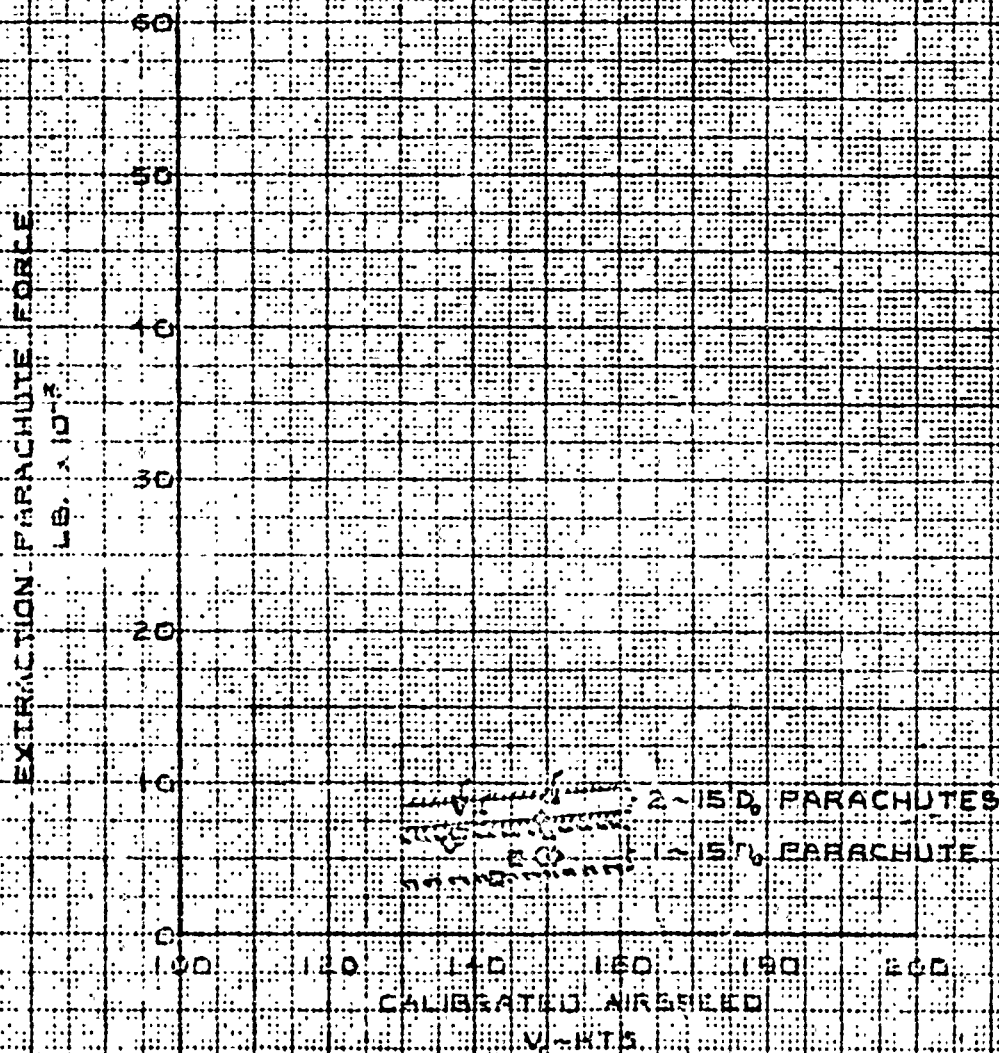


FIGURE 4.1

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EXTRACTION PARACHUTE FORCE VS. AIRSPEED

22'D. RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

O ~ 80' LINE LENGTH @ F.S. 1271

● ~ 80' LINE LENGTH @ F.S. 1260

□ ~ 100' LINE LENGTH @ F.S. 1260

○ ~ 140' LINE LENGTH @ F.S. 1172

◇ ~ 80' LINE LENGTH @ F.S. 1220, PARACHUTE REEFED TO 9'D.

SYMBOLS - AIRDROPS

○ ~ 80' LINE LENGTH

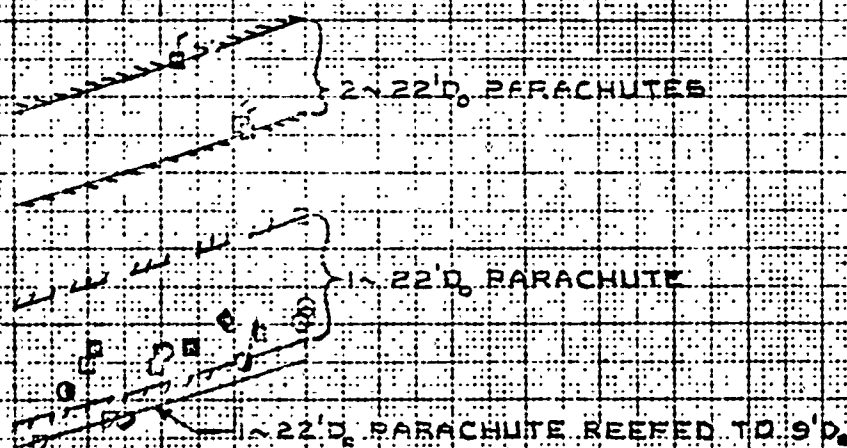
■ ~ 100' LINE LENGTH

● ~ 120' LINE LENGTH

◆ ~ 140' LINE LENGTH

EXTRACTION PARACHUTE FORCE
LB. $\times 10^3$

60
50
40
30
20
10
0



CALIBRATED AIRSPEED

KTS

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DATE _____

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EXTRACTION PARACHUTE FORCE VS. AIRSPEED

28'D. RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS ~ TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ ~ 80' LINE LENGTH @ F.S. 1271

○ ~ 80' LINE LENGTH @ F.S. 1250

○ ~ 100' LINE LENGTH @ F.S. 1250

○ ~ 140' LINE LENGTH @ F.S. 1172

SYMBOLS ~ AIRODROPS

○ ~ 80' LINE LENGTH

○ ~ 100' LINE LENGTH

○ ~ 120' LINE LENGTH

○ ~ 140' LINE LENGTH

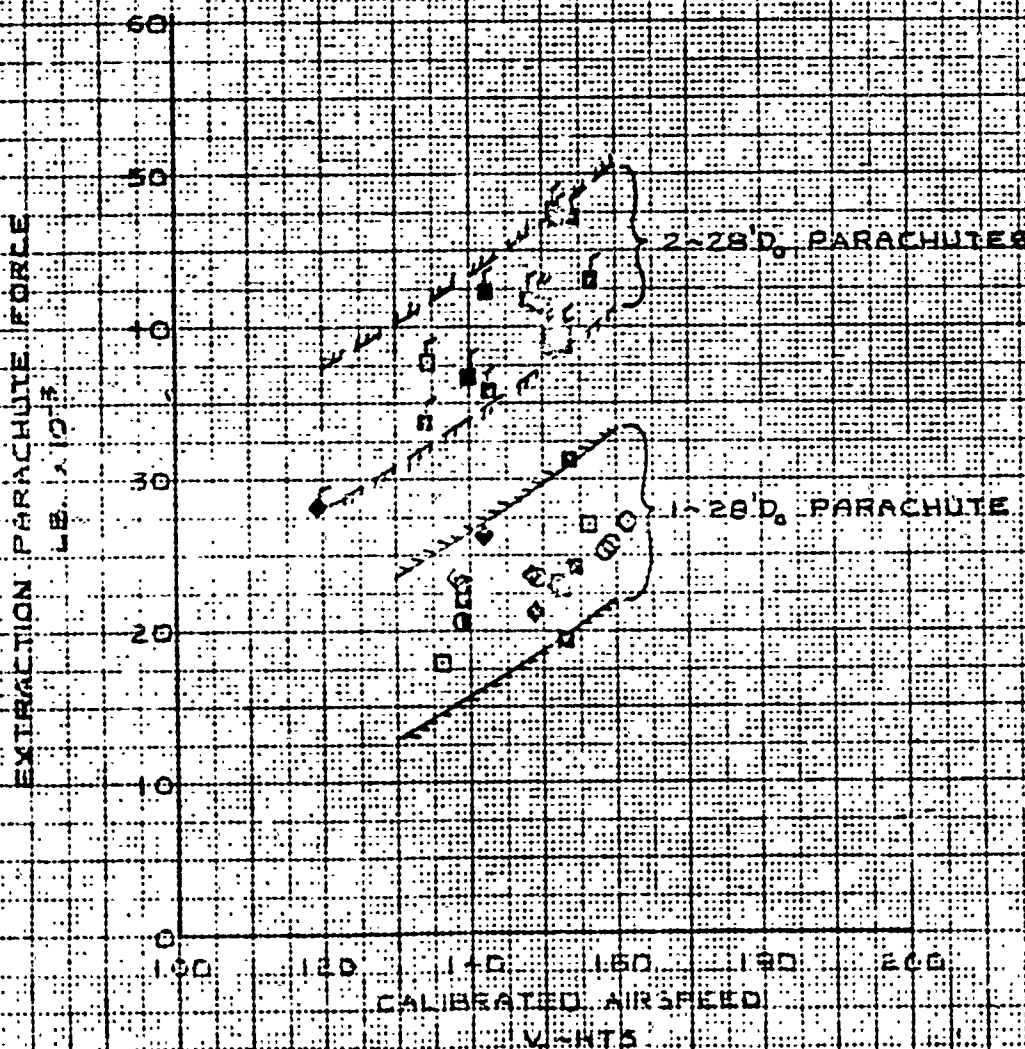


FIGURE 4-3

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EXTRACTION PARACHUTE FORCE VS. AIRSPEED

32' D. FIST RIBBON PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

○ ~ 80' LINE LENGTH @ FS. 1260

□ ~ 100' LINE LENGTH @ FS. 1260

◊ ~ 80' LINE LENGTH @ FS. 1260, PARACHUTE REEFED TO 24' DIA.

◻ ~ 100' LINE LENGTH @ FS. 1260, PARACHUTE REEFED TO 24' DIA.

SYMBOLS - AIRDROPS

■ ~ 100' LINE LENGTH

◆ ~ 140' LINE LENGTH

▲ ~ 100' LINE LENGTH, PARACHUTE REEFED TO 24' DIA.

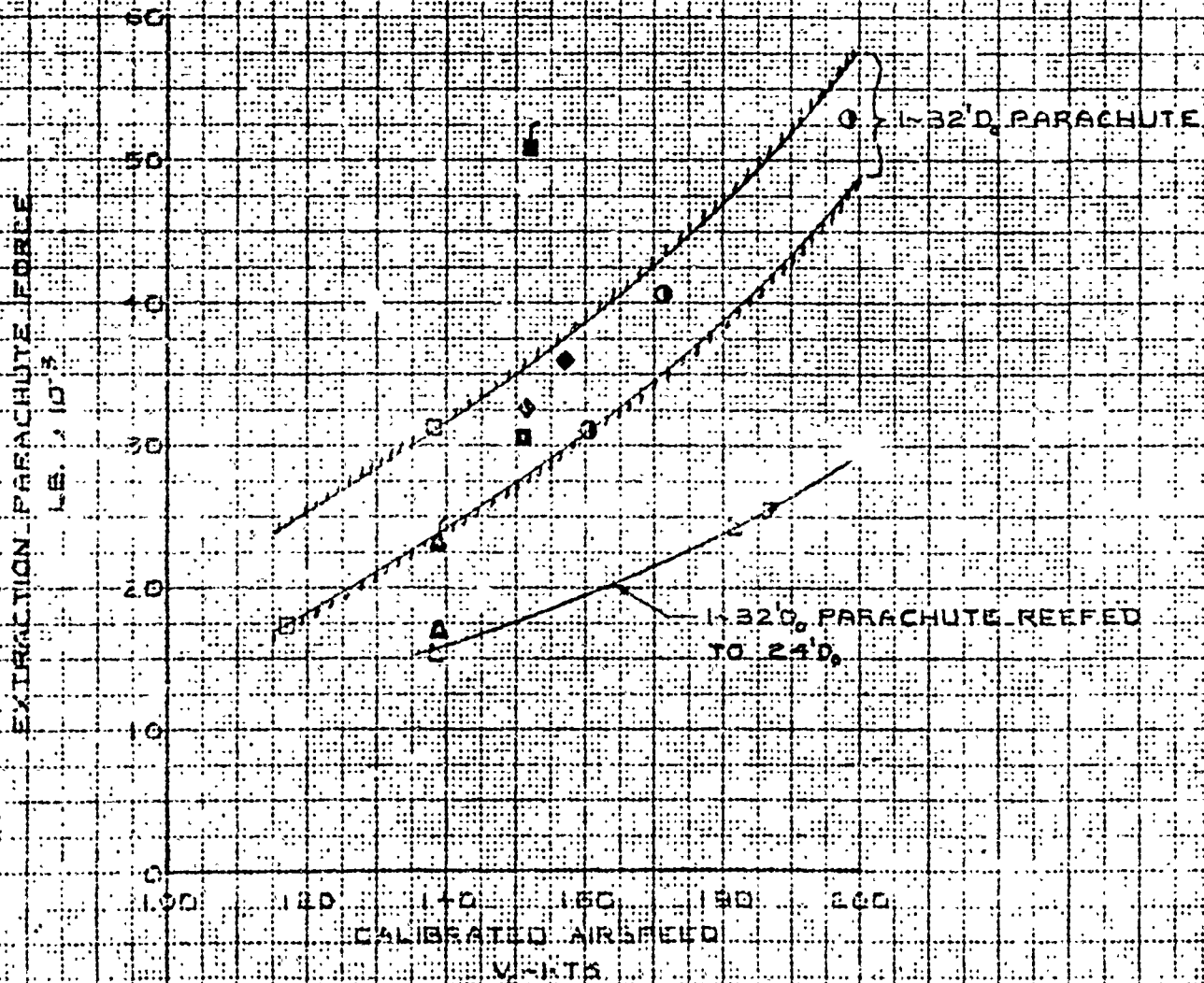


FIGURE 4-4

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EXTRACTION PARACHUTE FORCE VS. AIRSPEED

24'D. REINFORCED RING SLOT PARACHUTE

MODEL C-141A

SYMBOLS - TOW TESTS

FLAGGED SYMBOLS DENOTE CLUSTER OF 2 PARACHUTES

C ~ 80' LINE LENGTH @ ES. 1220

D ~ 100' LINE LENGTH @ ES. 1220

Q ~ 80' LINE LENGTH @ ES. 1160, PARACHUTE REEFED TO 18' DIA.

SYMBOLS - AIRDROPS

E ~ 100' LINE LENGTH

F ~ 100' LINE LENGTH, PARACHUTE REEFED TO 18' DIA.

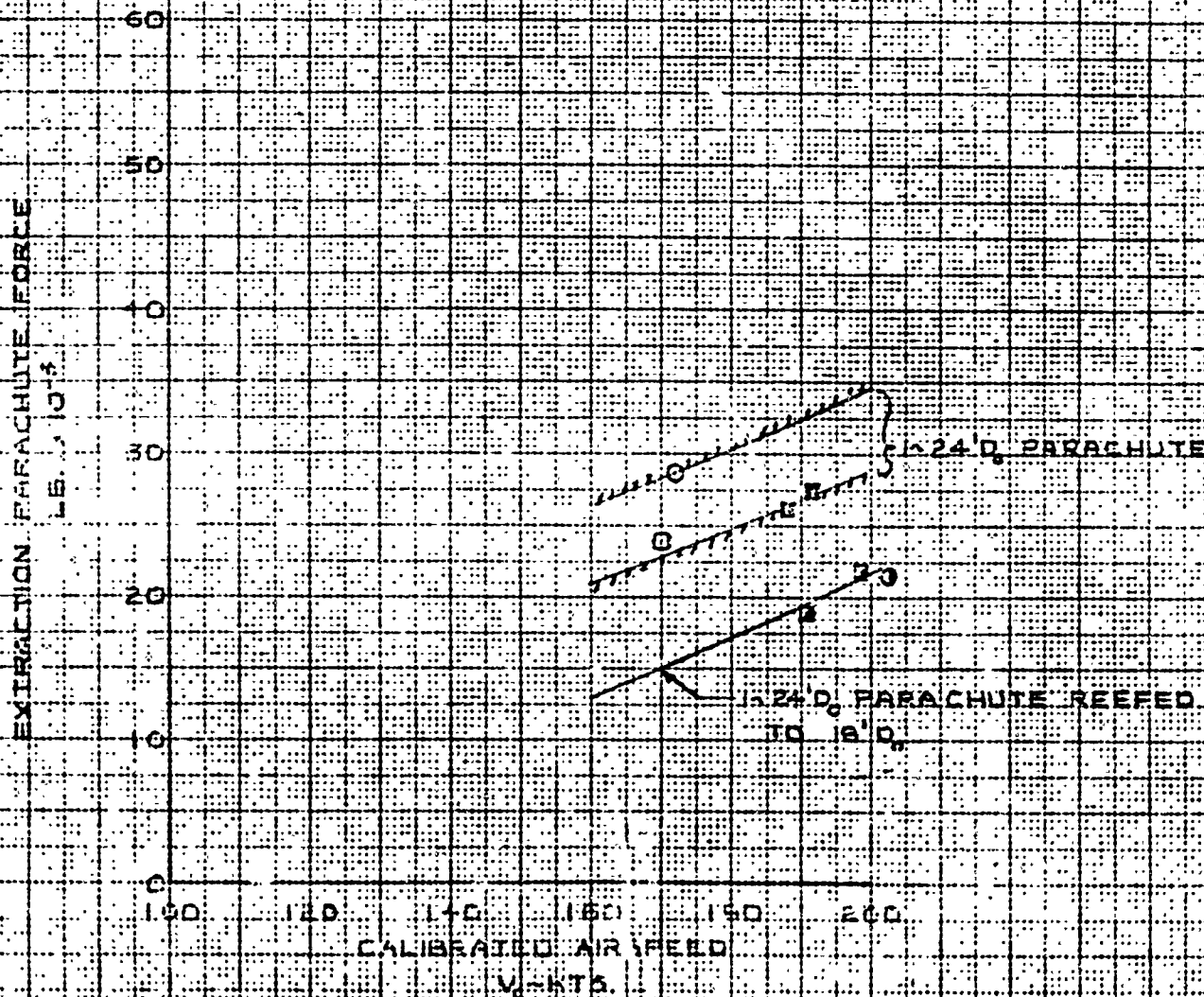
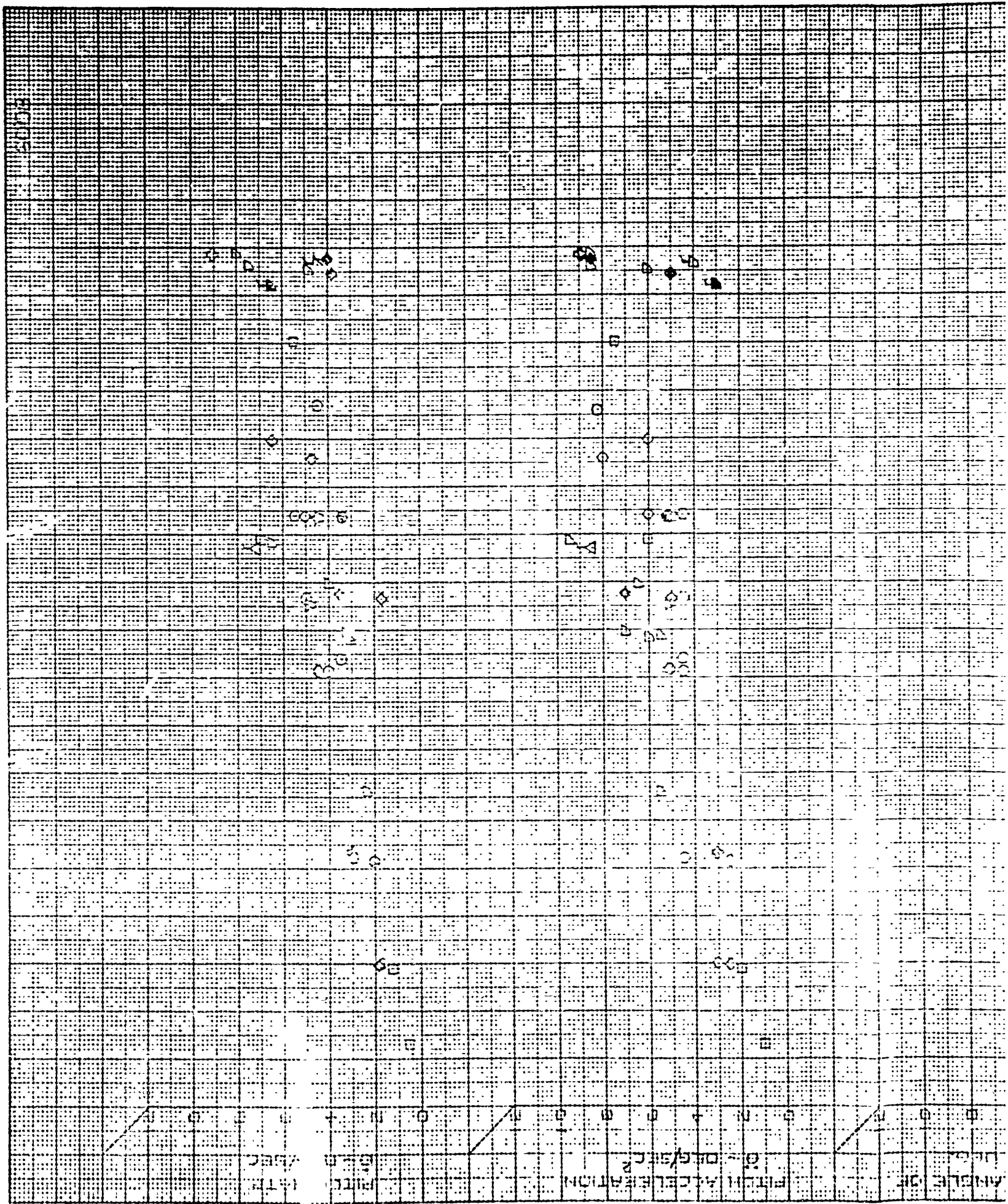


FIGURE 4-5



ANGLE OF
PITCH

PITCH ACCELERATION
G - DEG/SEC²

PITCH
G - DEG/SEC

LATE
ABSC

PREPARED BY JWP
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PIKE AIRPLANE RESPONSE DURING ADS MANEUVER

MODEL C-141A

NOTE

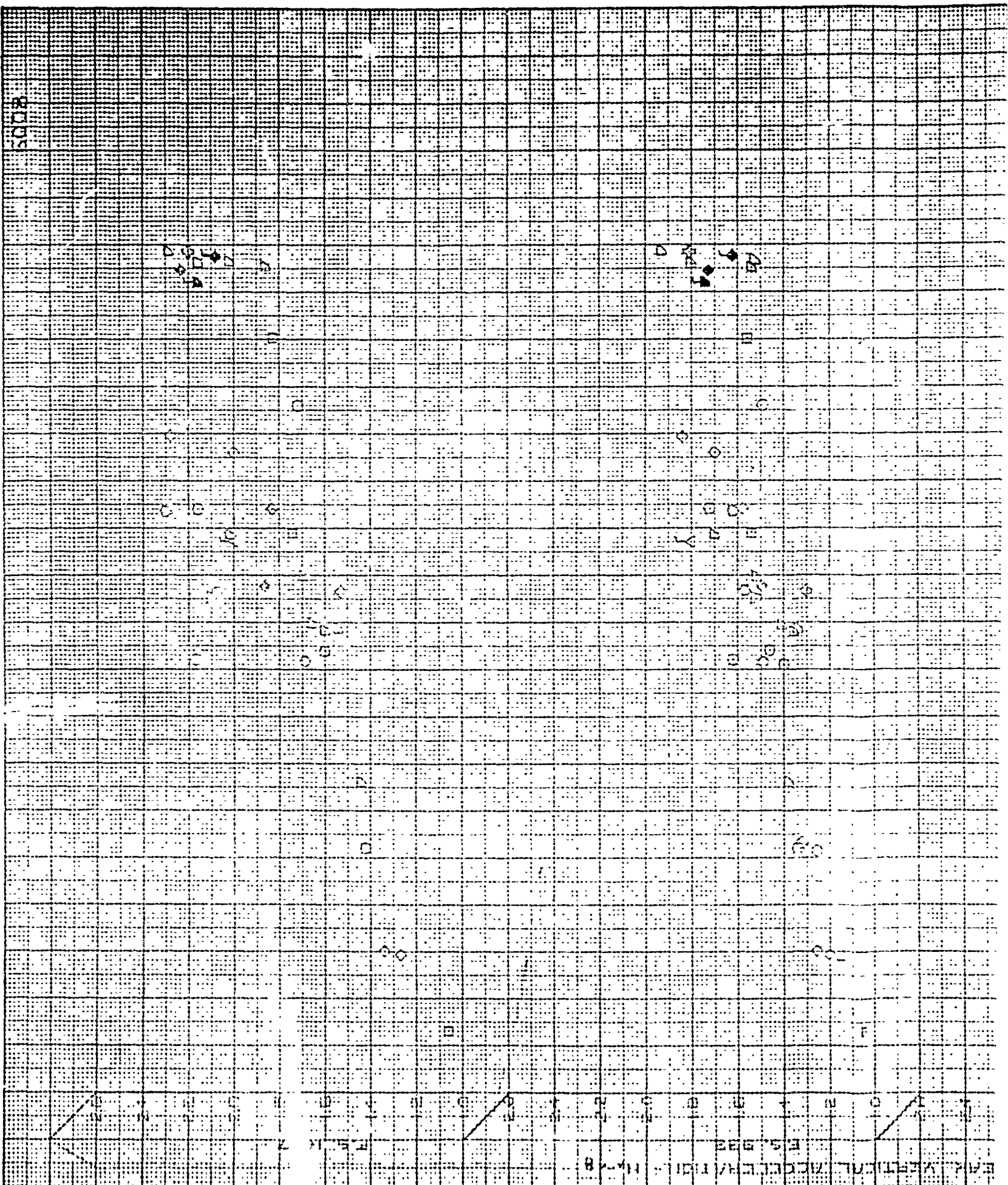
1. THE CURVE SUPERSEDES ALL PREVIOUS
 SUMMARY PLOTS FOR A, B, AND C.

SYMBOLS

- 1. OPEN SYMBOL DENOTE EXTRACTION
 SYSTEM MALFUNCTION OR FAILURE
- 2. OPEN SYMBOLS DENOTE STICK-FREE DROP
- 3. SOLID SYMBOLS DENOTE ELEVATOR
 INPUT
- 4. NOMINAL AIRSPEED

120 KIAS	~ Δ
130	~ O
140	~ O
150	~ O
155	~ O
160	~ O
170	~ O
180	~ O
200	~ ☆

FIGURE 4-6



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PEAK VERTICAL ACCELERATIONS DURING ADS MANEUVER

MODEL C-141A

NOTE

THIS CURVE SUPERCEDES ALL
 PREVIOUS SUMMARY PLOTS
 FOR N_z DATA

SYMBOLS

1 FLAGGED SYMBOLS DENOTE
 EXTRACTION SYSTEM MALFUNCTION
 OR FAILURE
 2 OPEN SYMBOLS DENOTE STICK
 FREE DRIFT
 3 SOLID SYMBOLS DENOTE ELEVATOR
 INPUT
 4 NOMINAL AIRSPEED

20 KNOTS	1.0
30	1.0
40	1.0
55	1.0
70	1.0
85	1.0
100	1.0
120	1.0
150	1.0
200	1.0

FIGURE 4-7

8008

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EFFECT OF EXTRACTION RATIO ON AIRPLANE
 RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. ~ 27500 LB.
2. AIRSPEED ~ 150 KIAS
3. ALTITUDE ~ 5000 FT.
4. G.W. ~ 188000 LB.
5. C.G. ~ 26% MAC
6. SF ~ 65%
7. STICK FREE

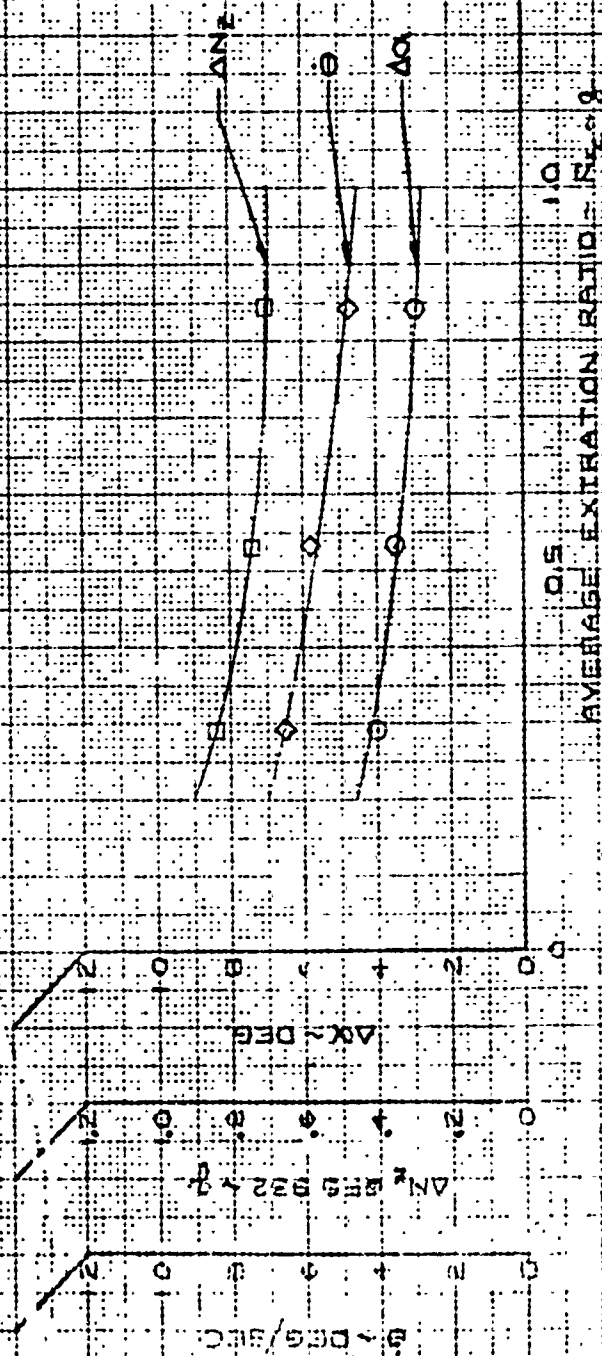


FIGURE 4-B

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EFFECT OF AIRSPEED ON AIRPLANE RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DROP CONDITIONS

1. CARGO WT. - 22000 LB.
2. δ - 40%
3. ALTITUDE - 5000 FT.
4. G.W. - 255000 LB.
5. C.G. - 25.6% MAC
6. STICK FREE

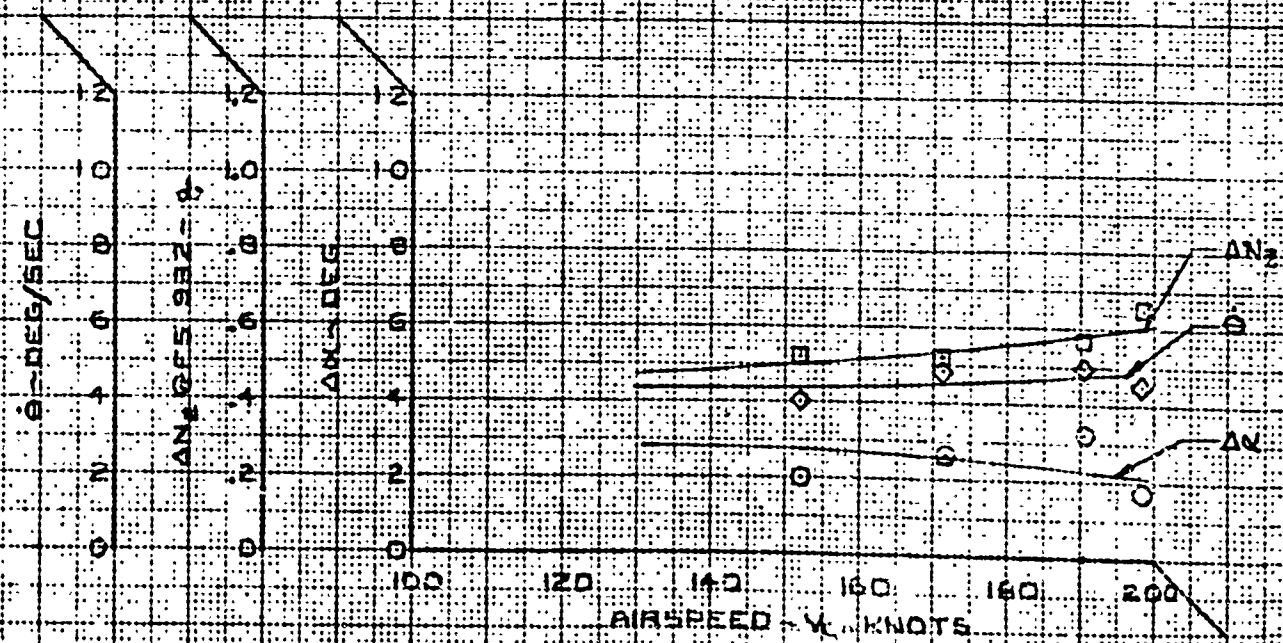


FIGURE 4-9

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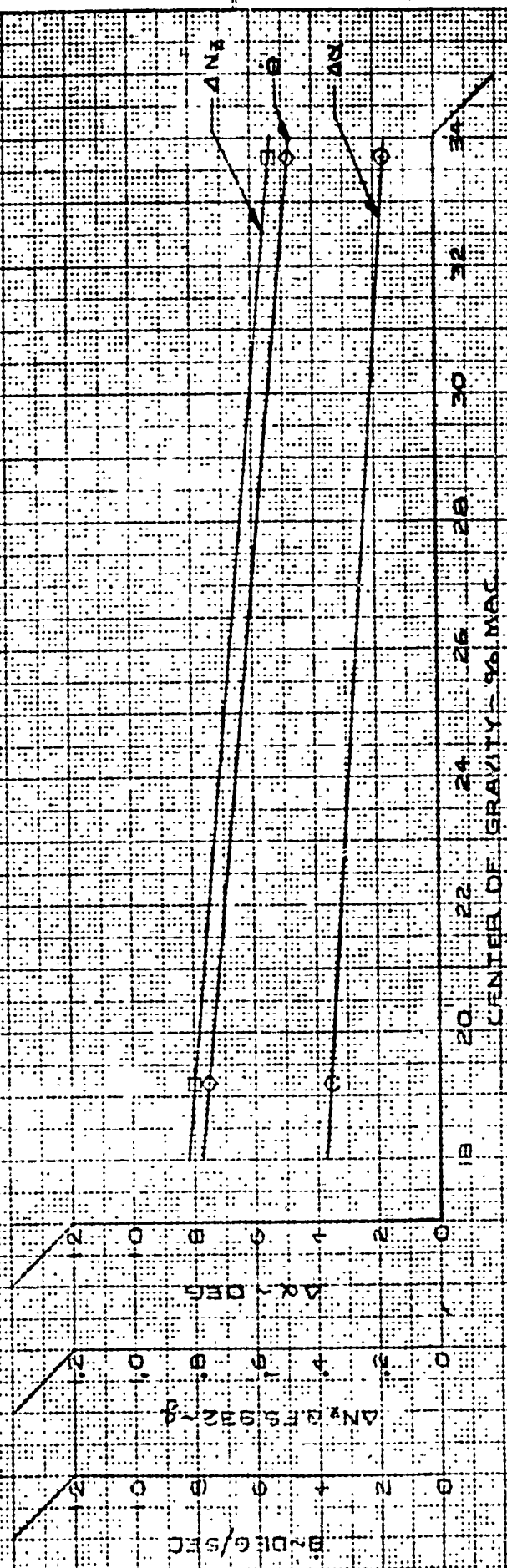
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EFFECT OF CENTER OF GRAVITY ON AIRPLANE
 RESPONSE DUE TO ADS MANEUVER

MODEL CLAIM

NOMINAL DROP CONDITIONS

1. CARGO WT. ~ 35000 LB.
2. AIRSPEED ~ 155 KNOTS
3. ALTITUDE ~ 5000 FT.
4. G.W. ~ 194000 LB.
5. C.G. ~ NOTED
6. δ ~ 63%
7. STICK FREE



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EFFECT OF GROSS WEIGHT ON AIRPLANE
 RESPONSE DUE TO ADS MANEUVER

MODEL C-141A

NOMINAL DEOP CONDITIONS

1. CARGO WT. - 33500 LBS.
2. AIRSPEED - 145 KCAS
3. ALTITUDE - 5000 FT.
4. C.G. - 27.5% MAC
5. δ - 55%
6. STICK FREE

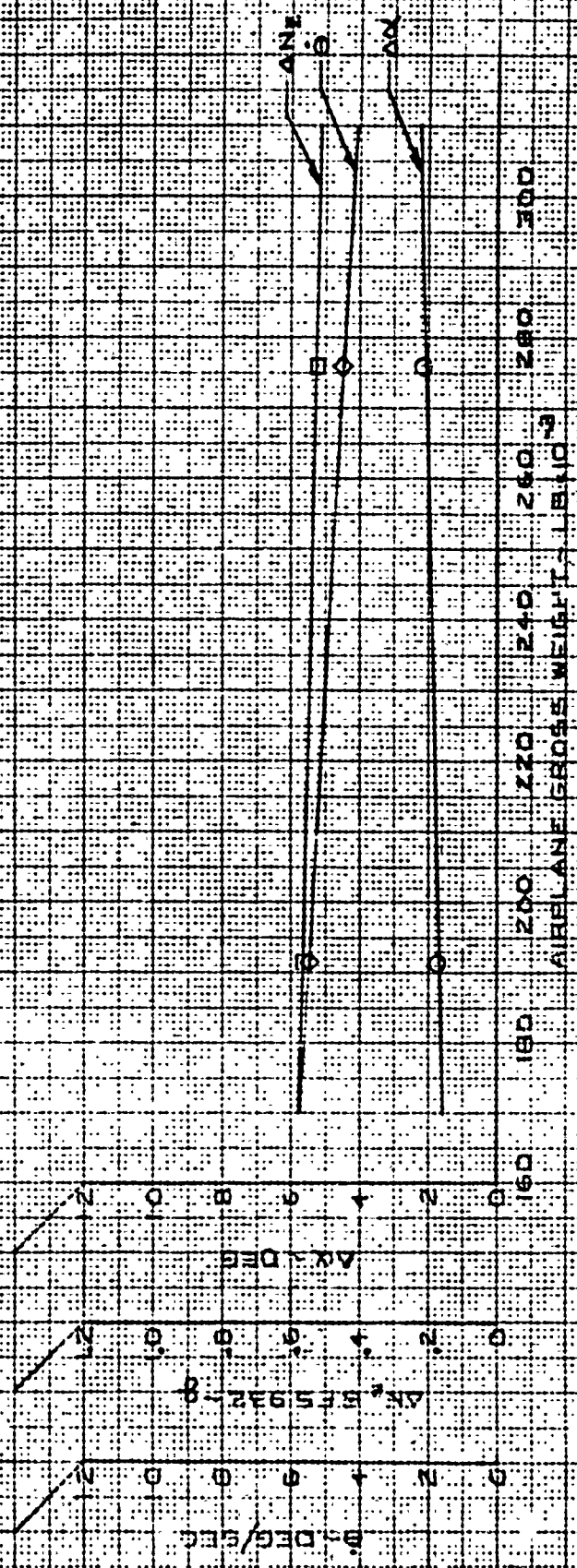


FIGURE 4-11

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EFFECT OF ALTITUDE ON AIRPLANE
 RESPONSE DUE TO ADS. MANEUVER

MODEL C-141A

NOMINAL OPF CONDITIONS

1. CARGO WT. 24700 LB.
2. AIRSPEED 195 KIAS
3. G.W. 254000 LB.
4. C.G. 25.8% MAC
5. GF 1.55%

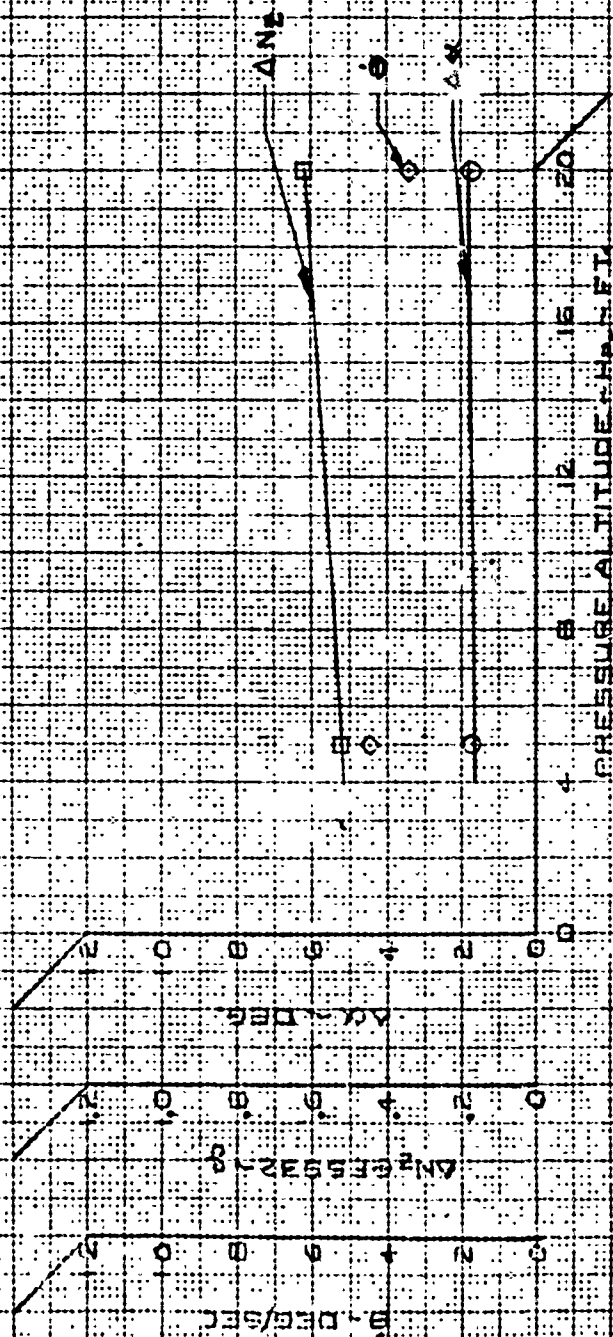


FIGURE 4-12

CTB
7-30-65
REVISED 10-7-65

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6003
1593

C_L VERSUS δ_F

ADS CONFIGURATION
MODEL C-141A

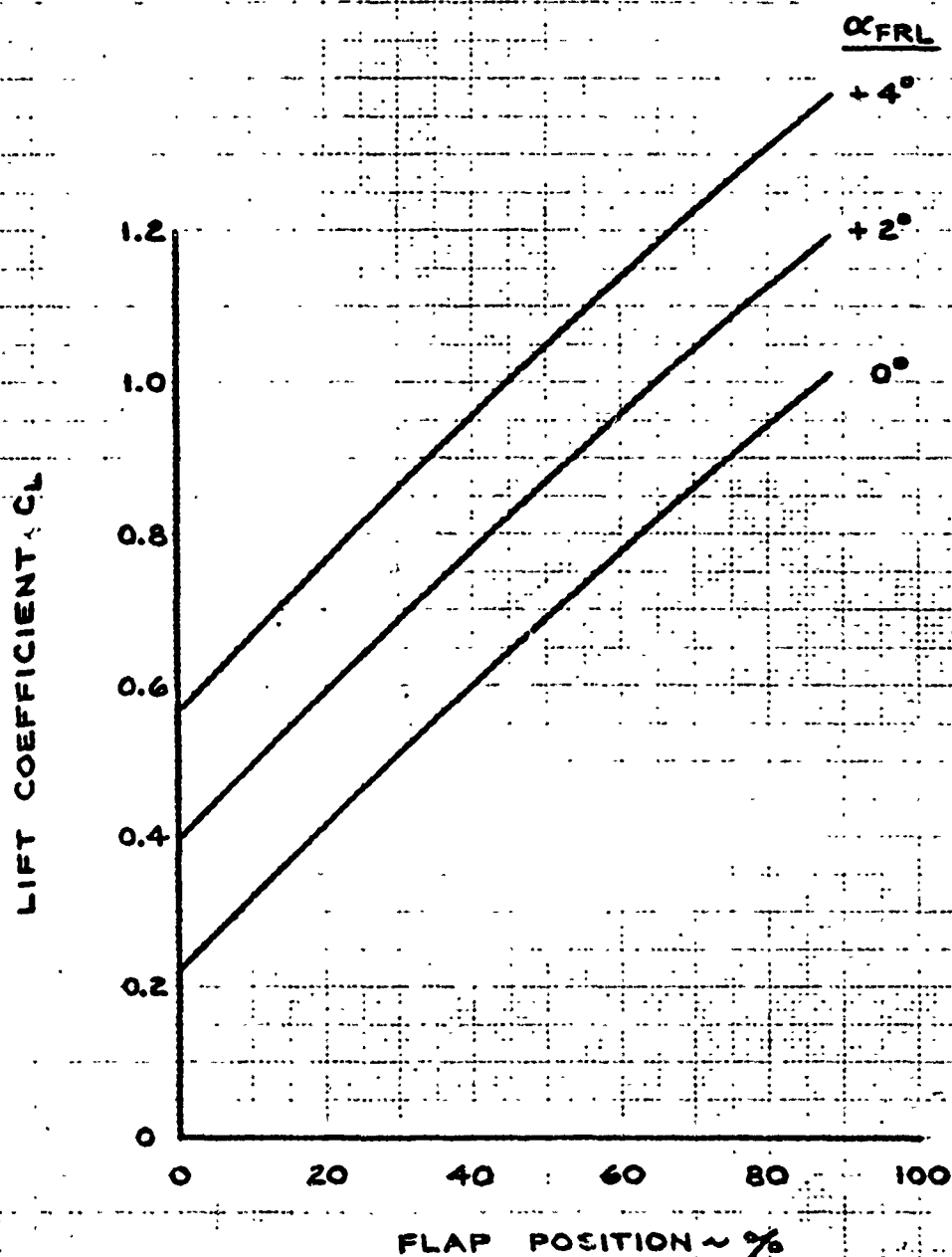


FIGURE 4-13

6003
1593

PREPARED BY **CTB**
 DATE **7-30-65**
 CHECKED BY **REVISED 12-7-65**

LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **4.57**

6003
 1592A

FLAP POSITION FOR ADS **MODEL C-141A**

2° NOSE UP
DECK ANGLE

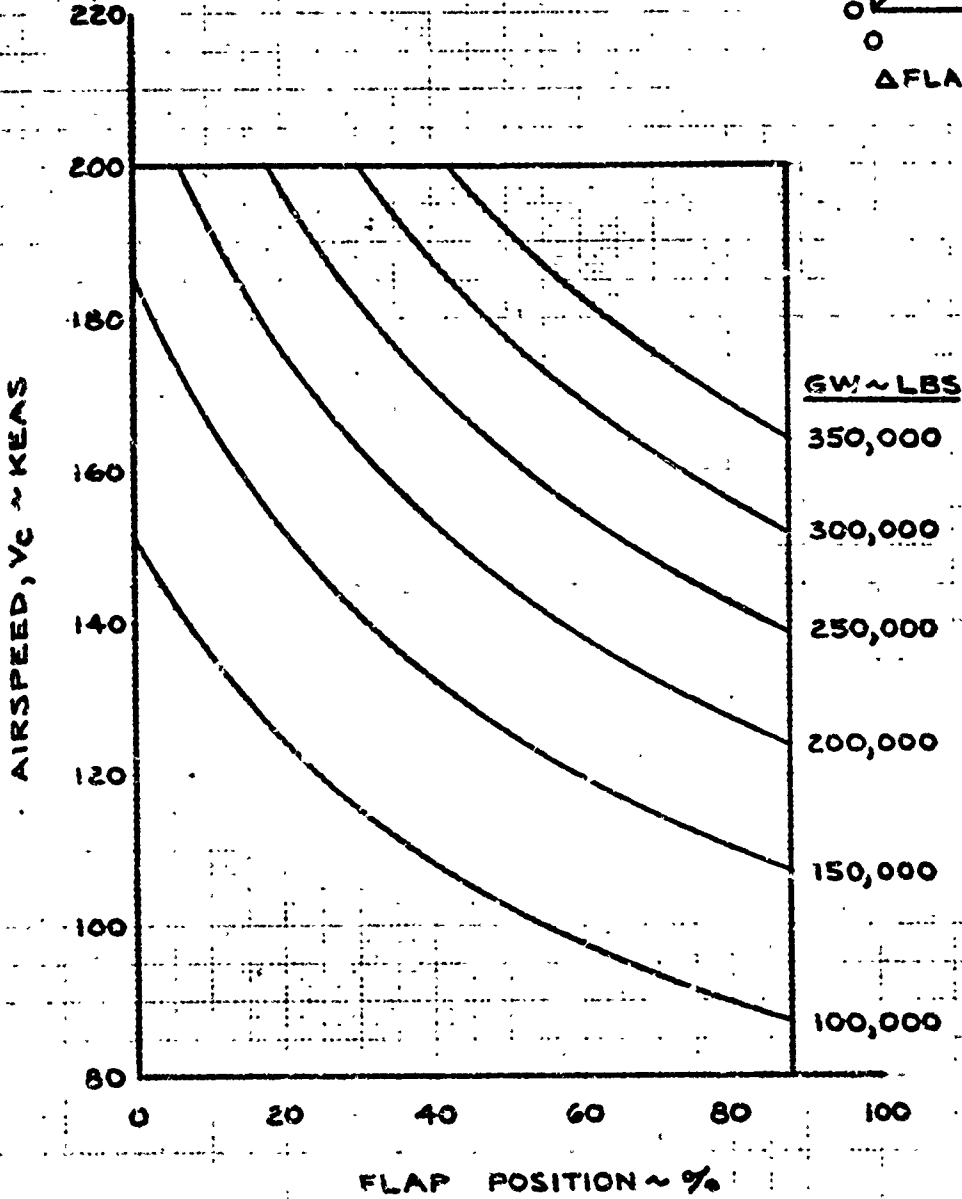
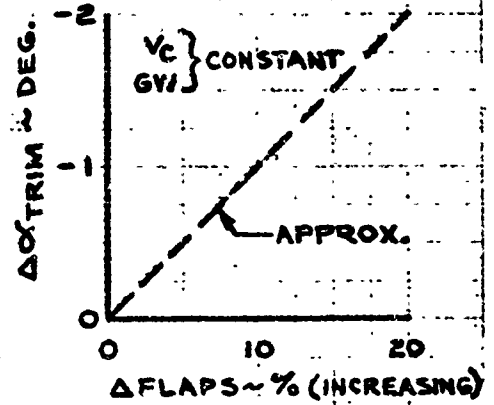


FIGURE 4-14

6003
 1592A

PREPARED BY JMP
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REPORT NO. ER 5473
 MODEL C-141A
 PAGE 4-58

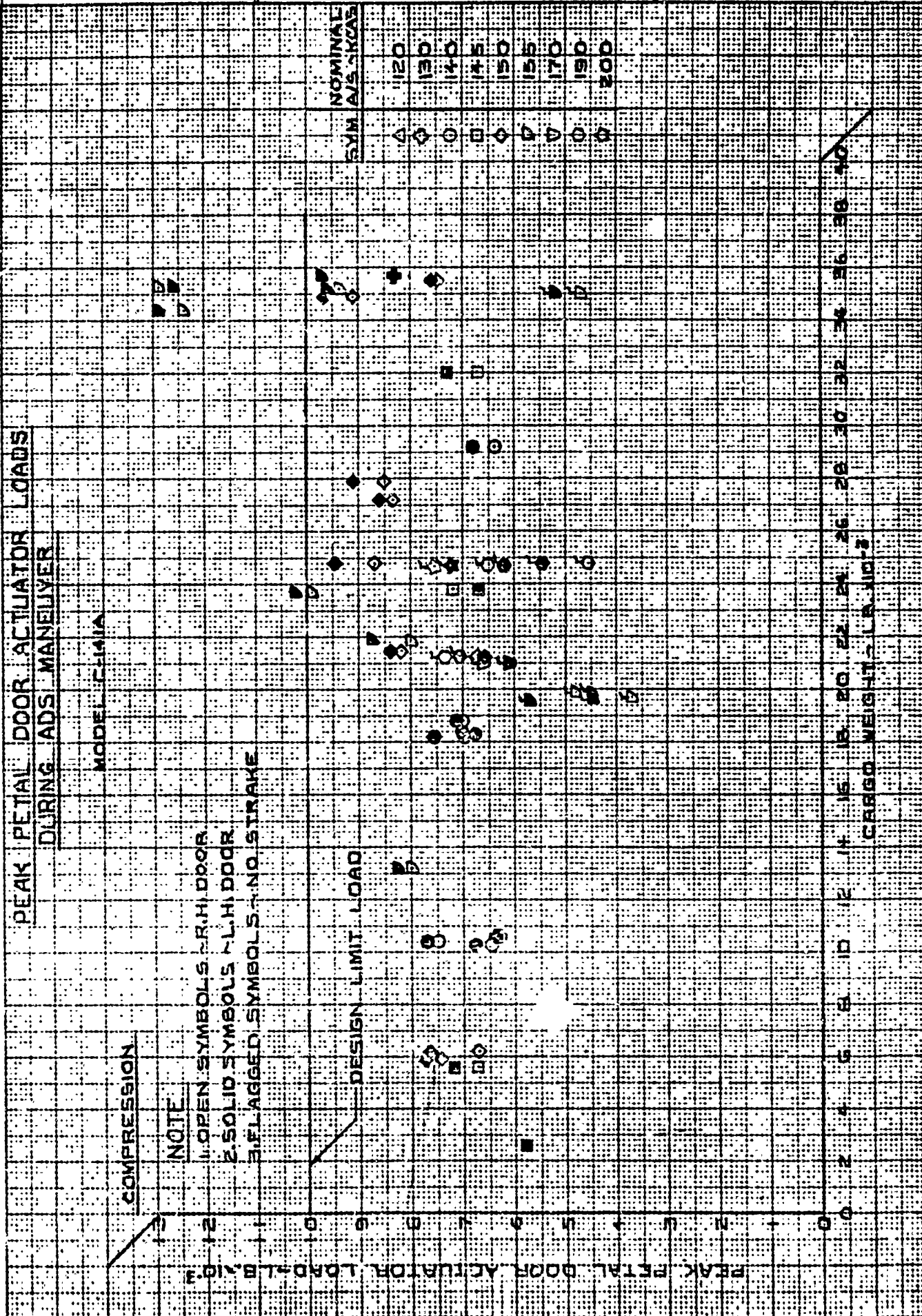


FIGURE 4-15

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REPORT NO. ER 5473
 MODEL C-141A
 PAGE 4.59

PETAL DOOR ACTUATOR LOADS MODEL C-141A

AF 63-8077
 FLIGHT 167

LAC 6008
 DATE: 8-17-65

RUN CONDITIONS

1. GW ~ 200,000 LBS.
2. CG ~ 24.0% MAC
3. H_p ~ 5,000 FT.

CONFIGURATION

1. STRAKE LENGTH ~ 0 FT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta_D = 55^\circ$
 $\beta = 0^\circ$

DASHED LINES DENOTE RAMP
 SIDE PANELS OFF

SYM	FLAP POS. - %
○	0
◊	20
△	50
□	88

FLAG DENOTES LH ACT.

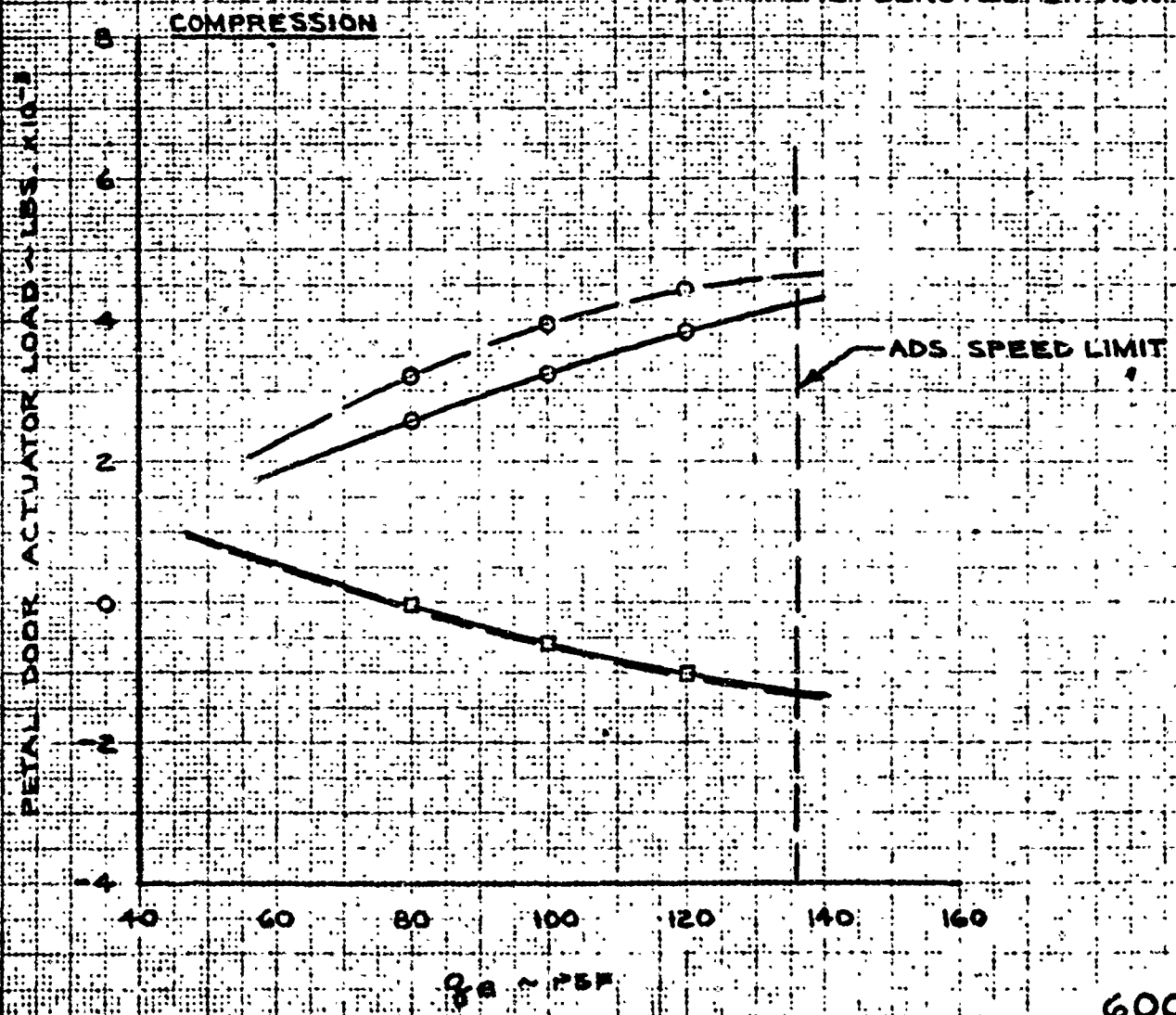


FIGURE 4-16

6008
 M23C

PREPARED BY CTB
 DATE 8-19-65
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 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE 4.60

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF 63-8077

LAC 6008

FLIGHT 161-165

DATE: 7-30-65

RUN CONDITIONS

1. GW ~ 222,000 LBS.
2. CG ~ 25.0% MAC
3. Hp ~ 5,000 FT.

CONFIGURATION

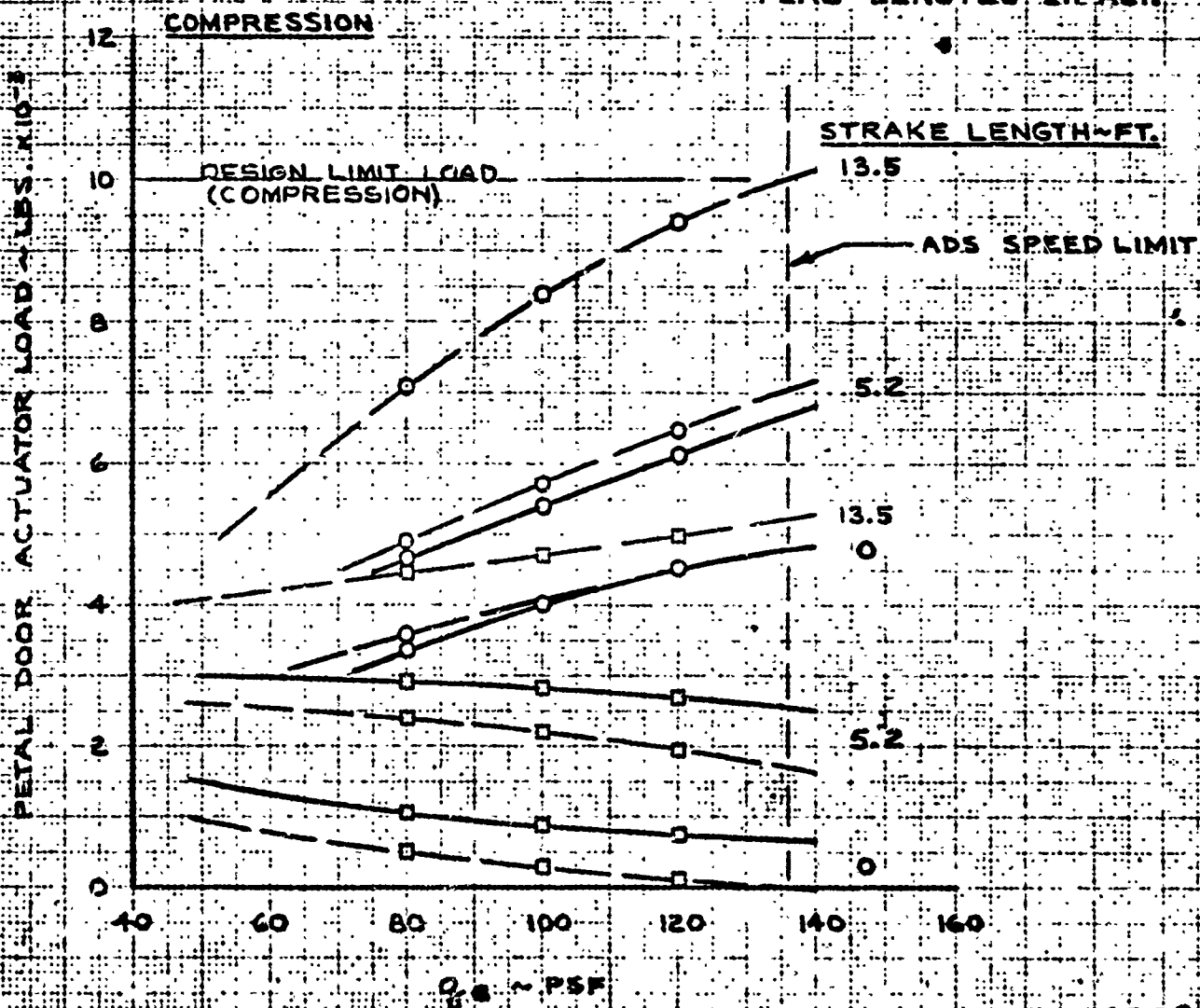
1. STRAKE LENGTH ~ NTDFT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta D = 60^\circ$
 $\beta = 0^\circ$

DASHED LINES DENOTE RAMP SIDE
 PANELS OFF

SYM	FLAP POS. ~ %
○	0
◊	20
△	50
□	88

FLAG DENOTES LH ACT.



PREPARED BY JA
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REPORT NO. ER 5473
 MODEL C-141A
 PAGE 4.61

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF 63-8077

LAC 6008

FLIGHTS 162-166

DATE: 7-30-65

8-16-65

RUN CONDITIONS

1. CW ~ 222,000 LBS.
2. CG ~ 25.0% MAC
3. H_p ~ 5,000 FT.

CONFIGURATION

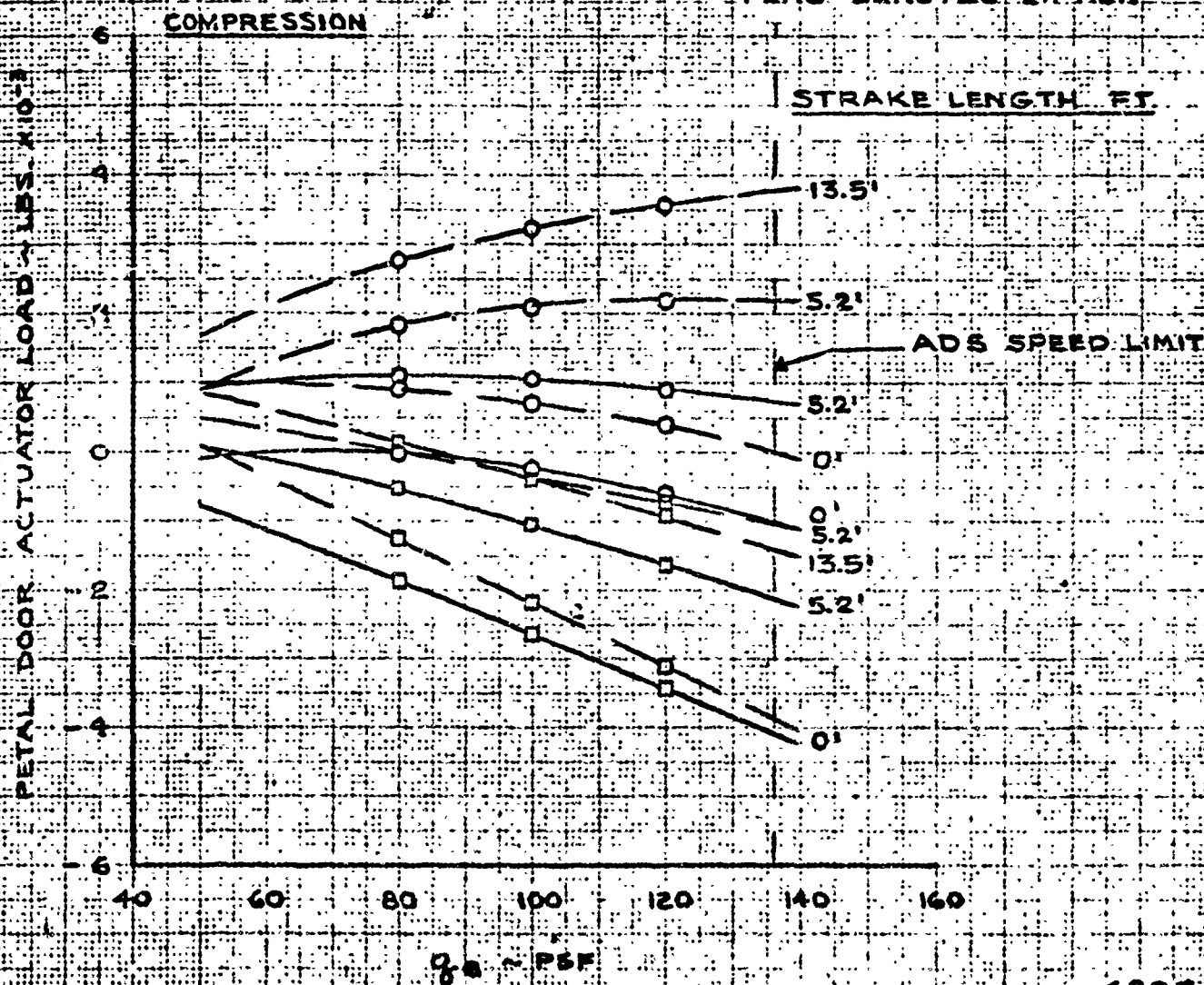
1. STRAKE LENGTH ~ NTD FT.
2. RAMP SIDE PANELS ~ NOTED
3. TROOP DOORS ~ CLOSED
4. GEAR ~ UP

$\delta D = 38^\circ$
 $\beta = 0^\circ$

DASHED LINES DENOTE RAMP
 SIDE PANELS OFF

SYM	FLAP POS. ~ %
○	0
◊	20
△	50
□	88

FLAG DENOTES LH ACT.



PREPARED BY DALTON
 DATE 2-18-65
 CHECKED BY _____

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 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE 4.62

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

MODEL C-141A
 AF 63-8077 LAC 6008

ADS CONFIGURATION

200 KEAS
 5000 FT.
 $\delta = 60^\circ$
 $\alpha = 0^\circ$

FLT	G.W. - LB	C.G. - %MAC	STRAKE LENGTH - FT	RAMP SIDE PANELS
161	228,000	22.0	13.5	OFF
163	234,400	22.5	5.2	OFF
164	245,200	25.8	5.2	ON
165	228,600	30.0	0	OFF
166	228,500	30.0	0	ON & OFF

12 COMPRESSION

PANELS OFF - - - -
 PANELS ON - - - -

DESIGN LIMIT LOAD
 (COMPRESSION)

PETAL DOOR ACTUATOR LOAD - LB ALD - 3
 LEFT SIDE

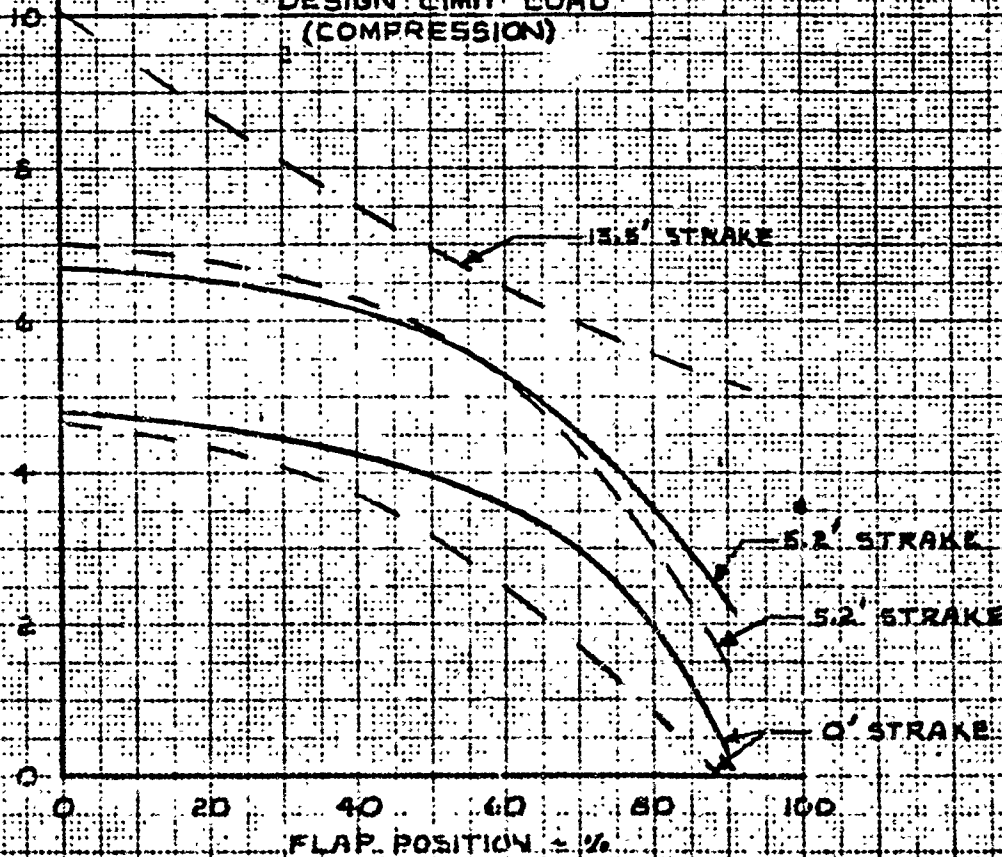


FIGURE 4-19

6008
 M29

REV. VANCE JAP

PREPARED BY DALTON
 DATE 2-11-65
 CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. SR-5473
 MODEL C-141A
 PAGE 4.63

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

MODEL C-141A

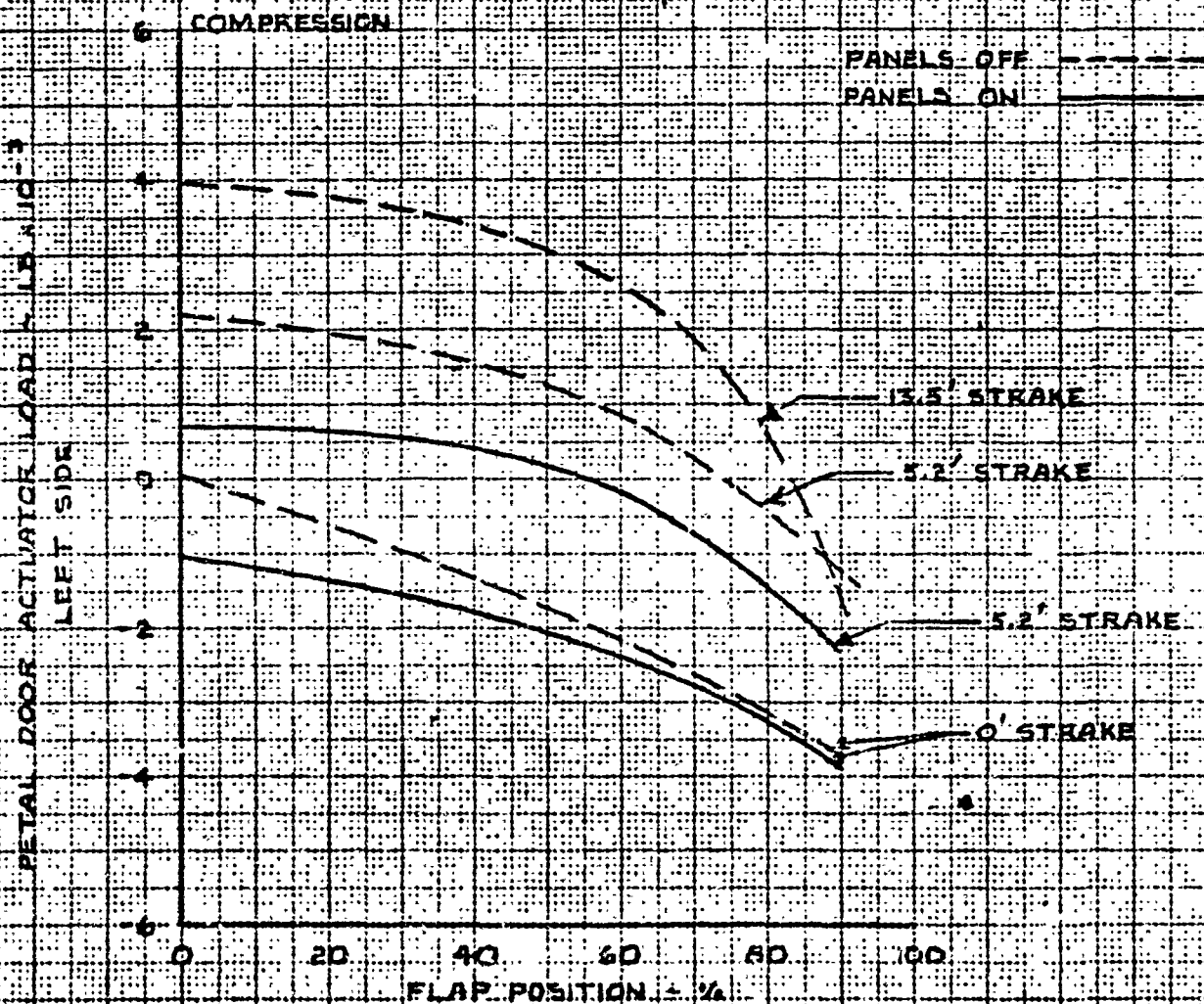
AF 63-8077

LAC 6008

ADS CONFIGURATION

200 KEAS
 5000 FT
 $\delta = 35^\circ$
 $\beta = 0^\circ$

FLT	G.W. - LB	C.G. - %MAC	STRAKE LENGTH - FT	RAMP SIDE PANELS
162	229,000	22.0	13.5	OFF
163	221,000	21.5	5.2	OFF
164	233,200	25.0	5.2	ON
166	228,500	30.0	0	ONLY OFF



PREPARED BY CTB
DATE 8-18-65
CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A
PAGE 4.68

PETAL DOOR ACTUATOR LOADS IN TRIMMED FLIGHT

MODEL C-141A

AF 63-8077

LAC 6005

FLIGHT 167

DATE: 8-17-65

ADS CONFIGURATION

RUN CONDITIONS

1. GW ~ 200,000 LBS.
2. CG ~ 24.0 % MAC
3. Hp ~ 5,000 FT.
4. V_e ~ 200 KEAS

CONFIGURATION

1. STRAKE LENGTH ~ 0 FT.
2. TROOP DOORS ~ CLOSED
3. GEAR ~ UP

$\delta_D = 55^\circ$
 $\beta = 0^\circ$

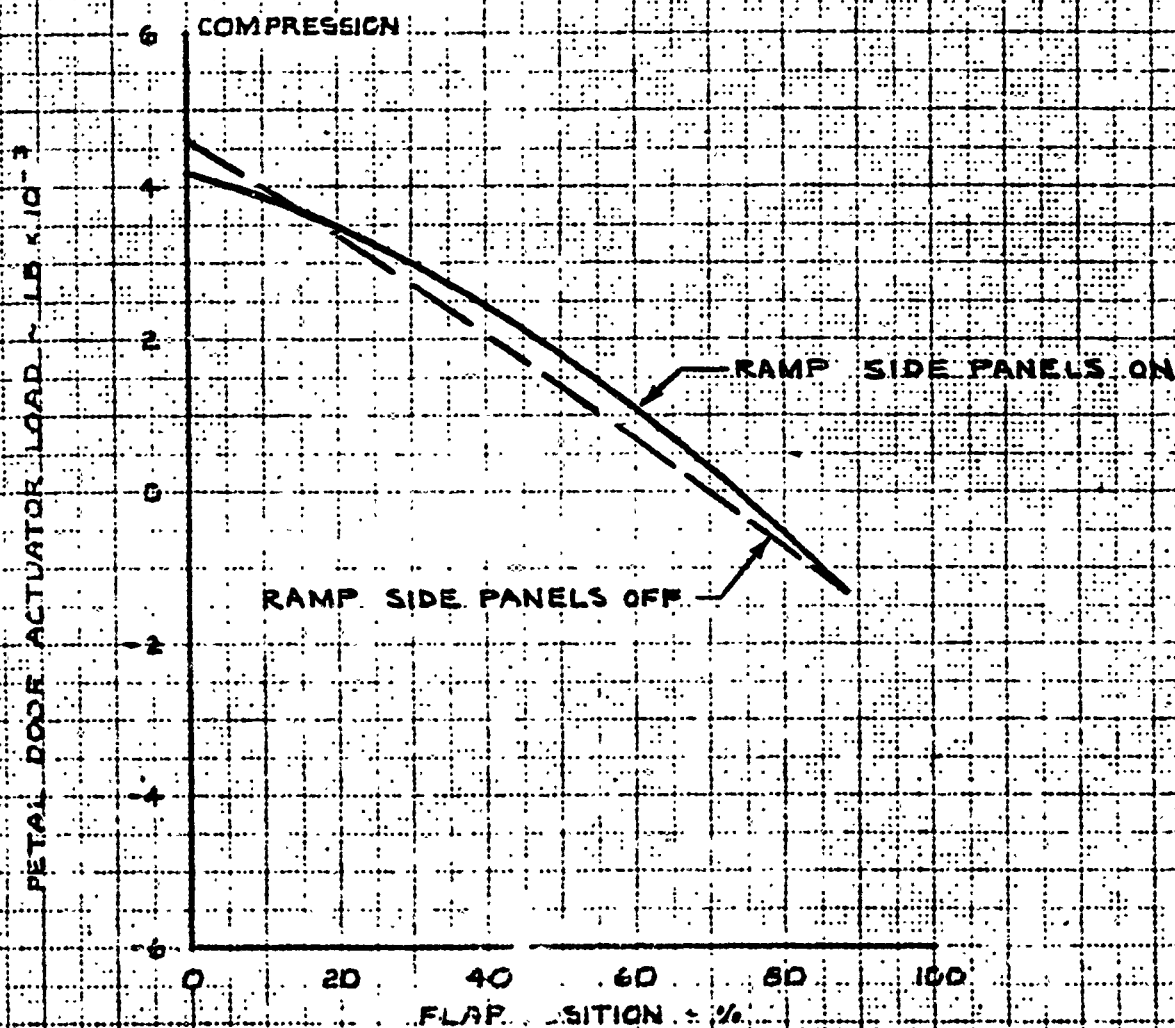


FIGURE 4-21

600B
M35C

PREPARED BY Fogg
 DATE 8-18-65
 CHECKED BY REV. 10-23-65 CAS

LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

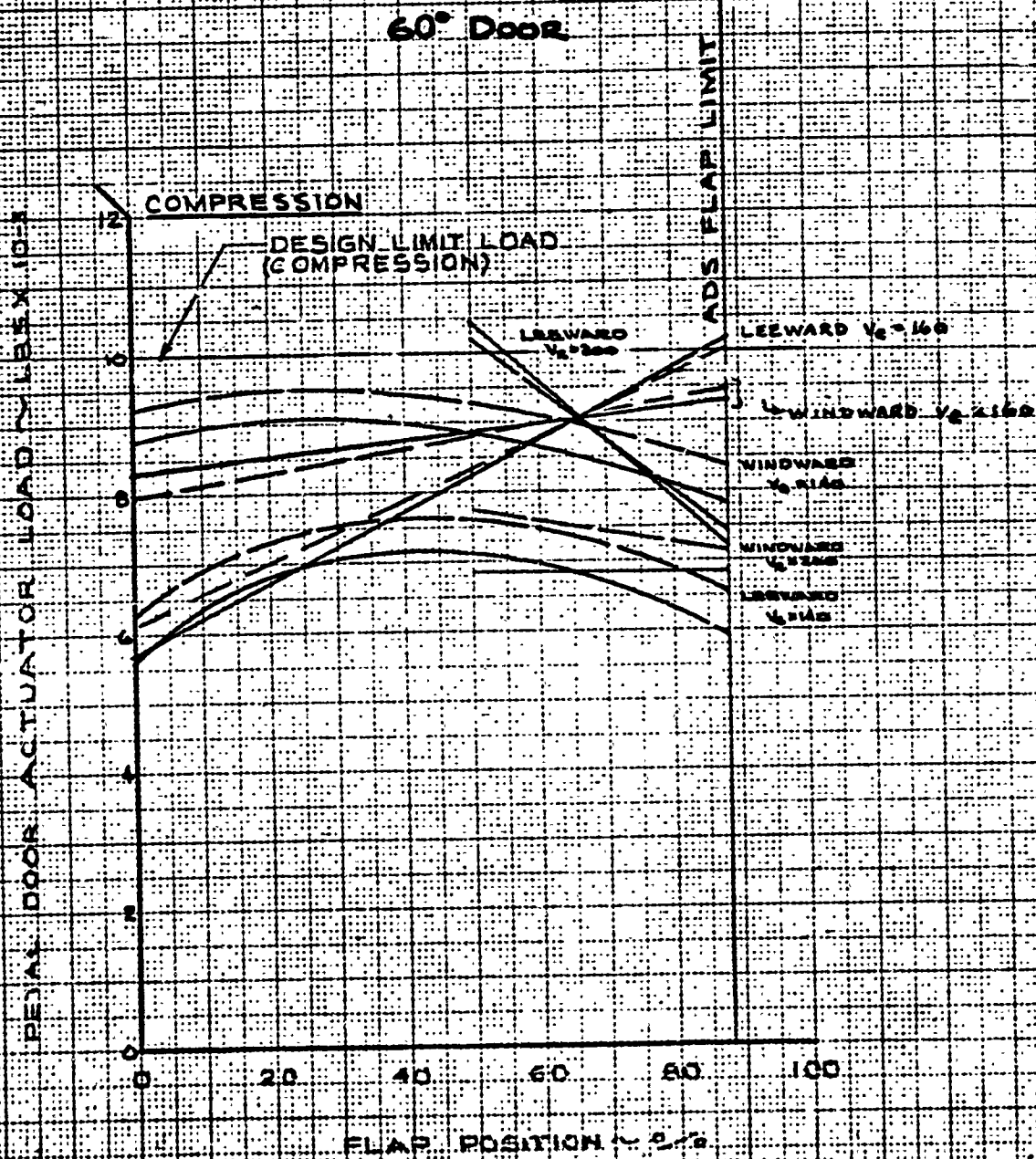
REPORT NO. ER 5473
 MODEL C-141A
 PAGE 4.65

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A
 AF 63-2077 LAC 6008
 FLIGHT 161 DATE 1-10-65
 ADS CONFIGURATION

14.5 STRAPS
 RAAP SIDE PANELS OFF
 LH OOPS
 RH OOPS

NOTE
 1 DATA AT RUDDER BOOST CUTOFF



PREPARED BY Font
 DATE 8-18-65
 CHECKED BY _____

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 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE 4.66

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A

AF 53-2073

LAC 6008

FLIGHT 162

DATE 8-3-65

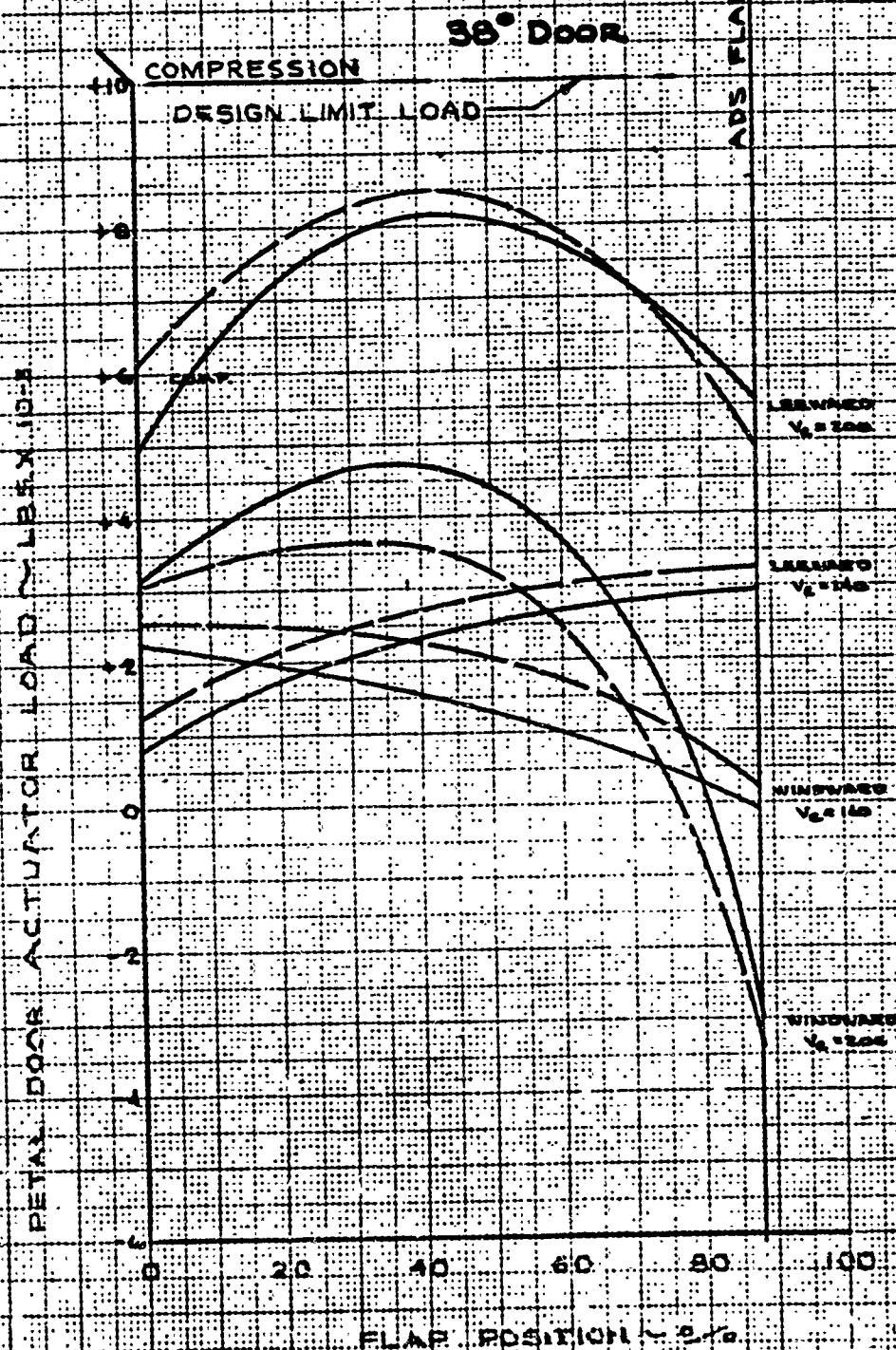
ADS CONFIGURATION

NOTE

1. DATA AT RUDDER
 BOOST CUTOFF

15.5" STRAKE
 RAAP SIDE PANELS OFF

--- LH DOOR
 --- RH DOOR



6008

M 31-B

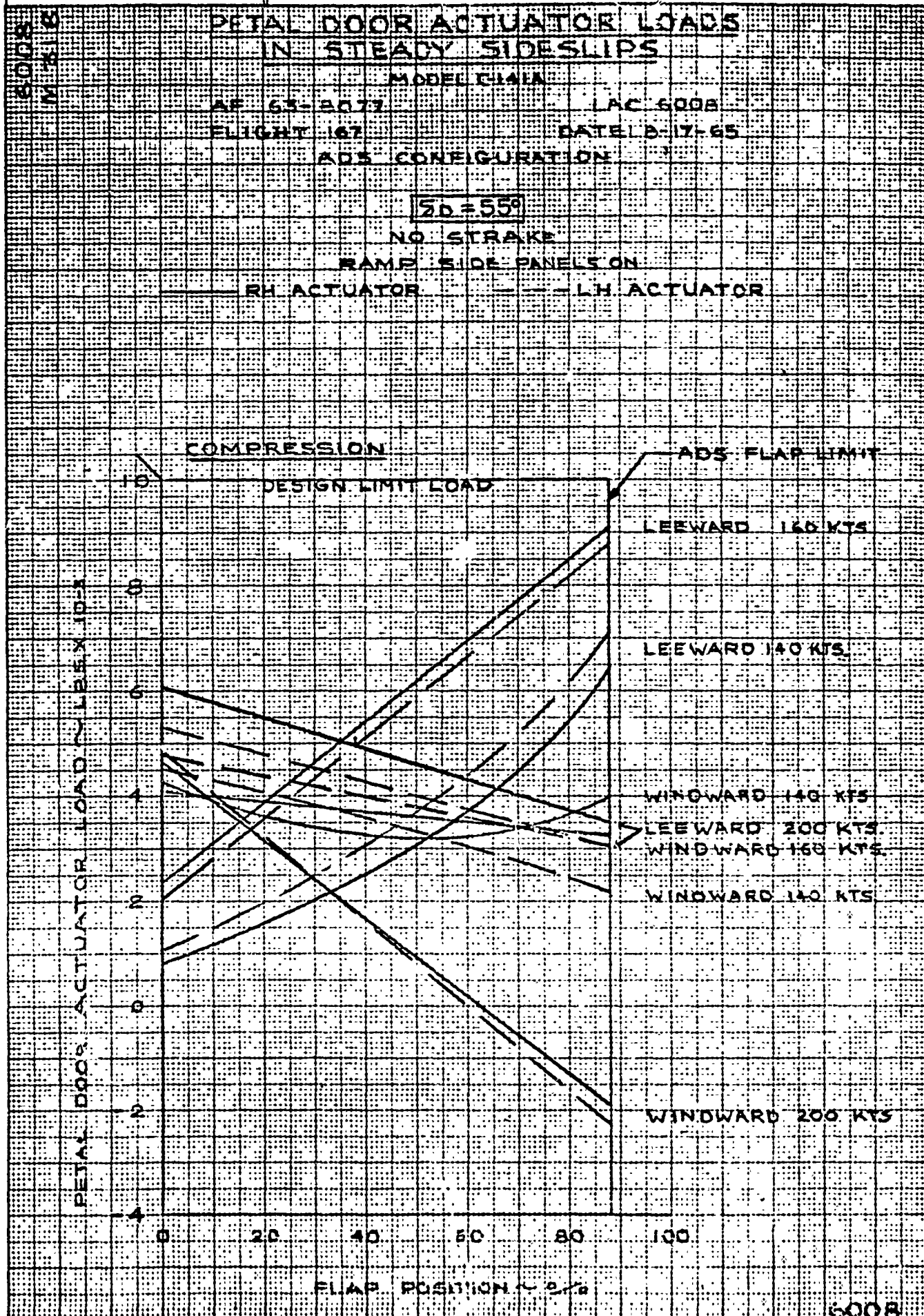
Rev V31/66 JWP

FIGURE 4-23

PREPARED BY JA
DATE 2-20-65
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REPORT NO. ER 5473
MODEL C-141A
PAGE 4.67



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CHECKED BY _____

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE 4.68

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A

AF 53-2077

LAC 6008

FLIGHT 165,166

DATE 8-13, 16-65

ADS CONFIGURATION

NO STRAKE

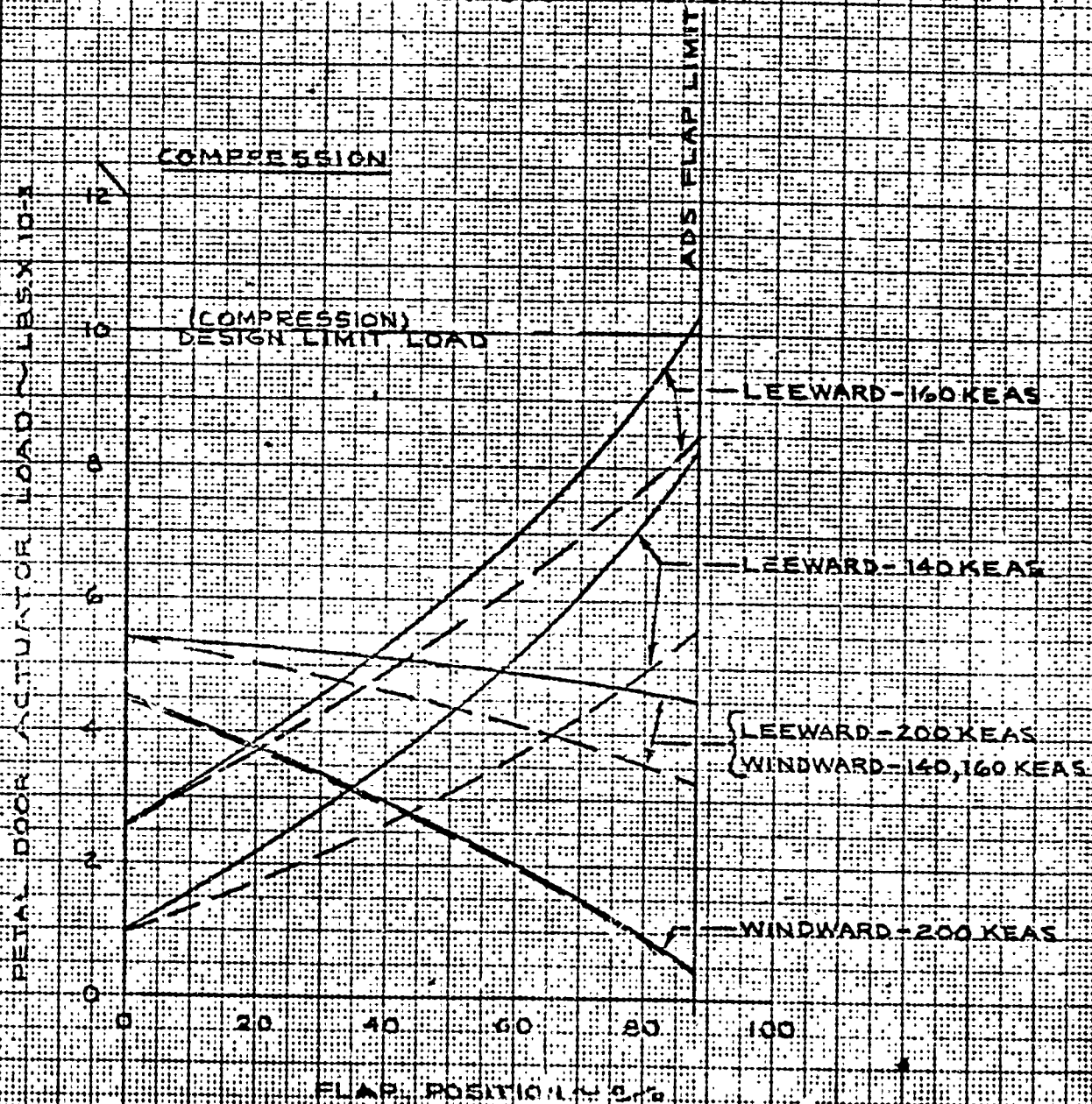
60° DOOR

--- RAMP SIDE PANELS OFF

--- RAMP SIDE PANELS ON

NOTE:

1. DATA AT RUDDER BOOST CUTOFF



REPORT NO. ER 5473
MODEL C-1411
PAGE A.69

MODEL CLAIM

REF ID: A632072

LAC 600B

FLIGHT 105 6122

DATE 12-15-65

ADS CONFIGURATION

NO STRAKE

RAMP SIDE PANELS OFF ON

END

DATA AT RUDDER BOOST CUTOFF



FIGURE 4.26

PREPARED BY JA
 DATE 8-20-65
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LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. LR 5473
 MODEL C-141A
 PAGE 4.70

PETAL DOOR ACTUATOR LOADS IN STEADY SIDESLIPS

MODEL C141A

AF 63-2073

LAC 6008

FLIGHT 157

DATE 12-17-65

ADS CONFIGURATION

50-55°

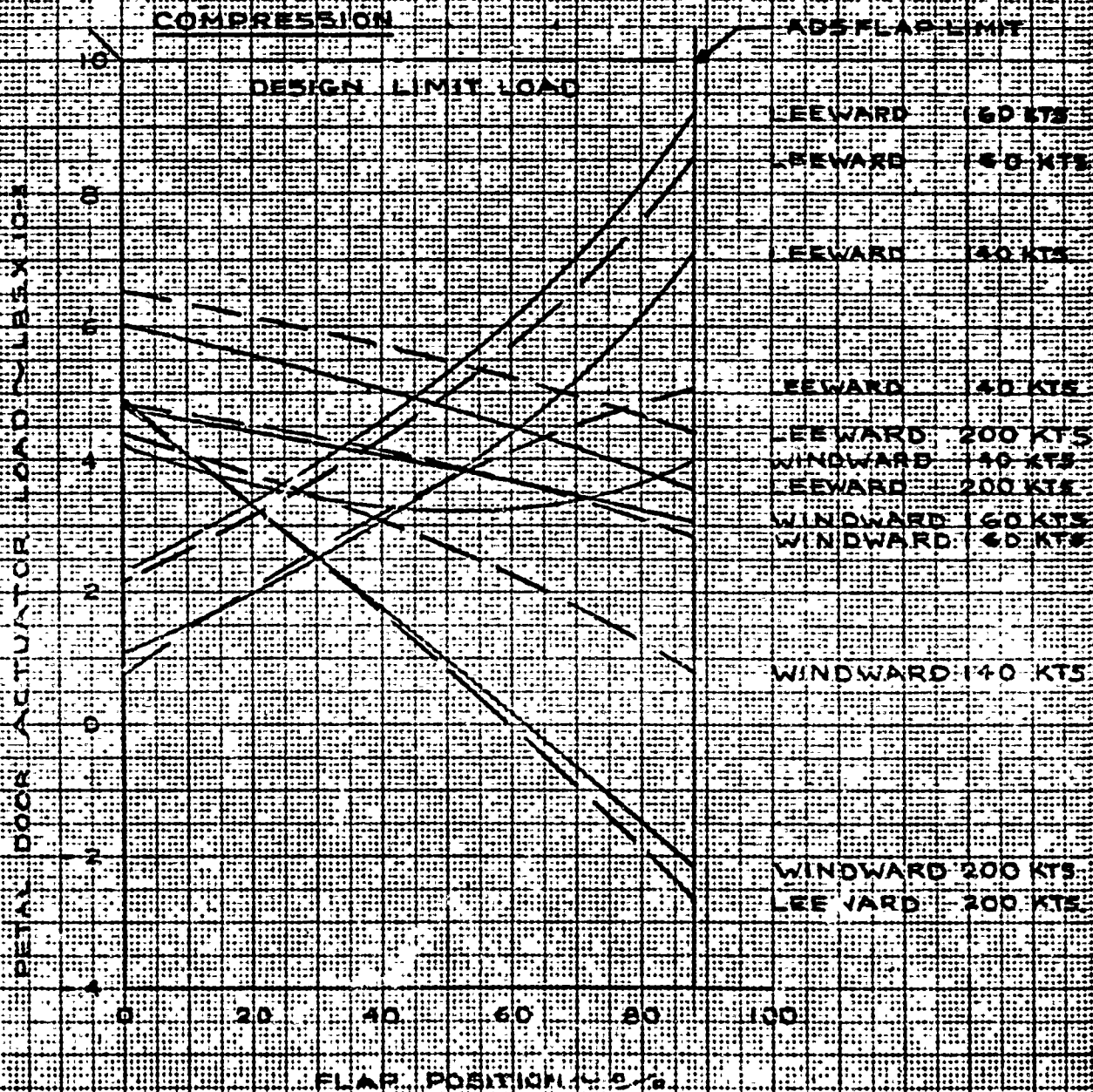
NO STRAKE

— RAMP SIDE PANELS ON

— RAMP SIDE PANELS OFF

NOTE

1. DATA AT RUDDER BOOST CUTOFF



PREPARED BY MBH	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	REPORT NO. FR 5473
DATE _____		MODEL C-141A
CHECKED BY _____		PAGE 4.71

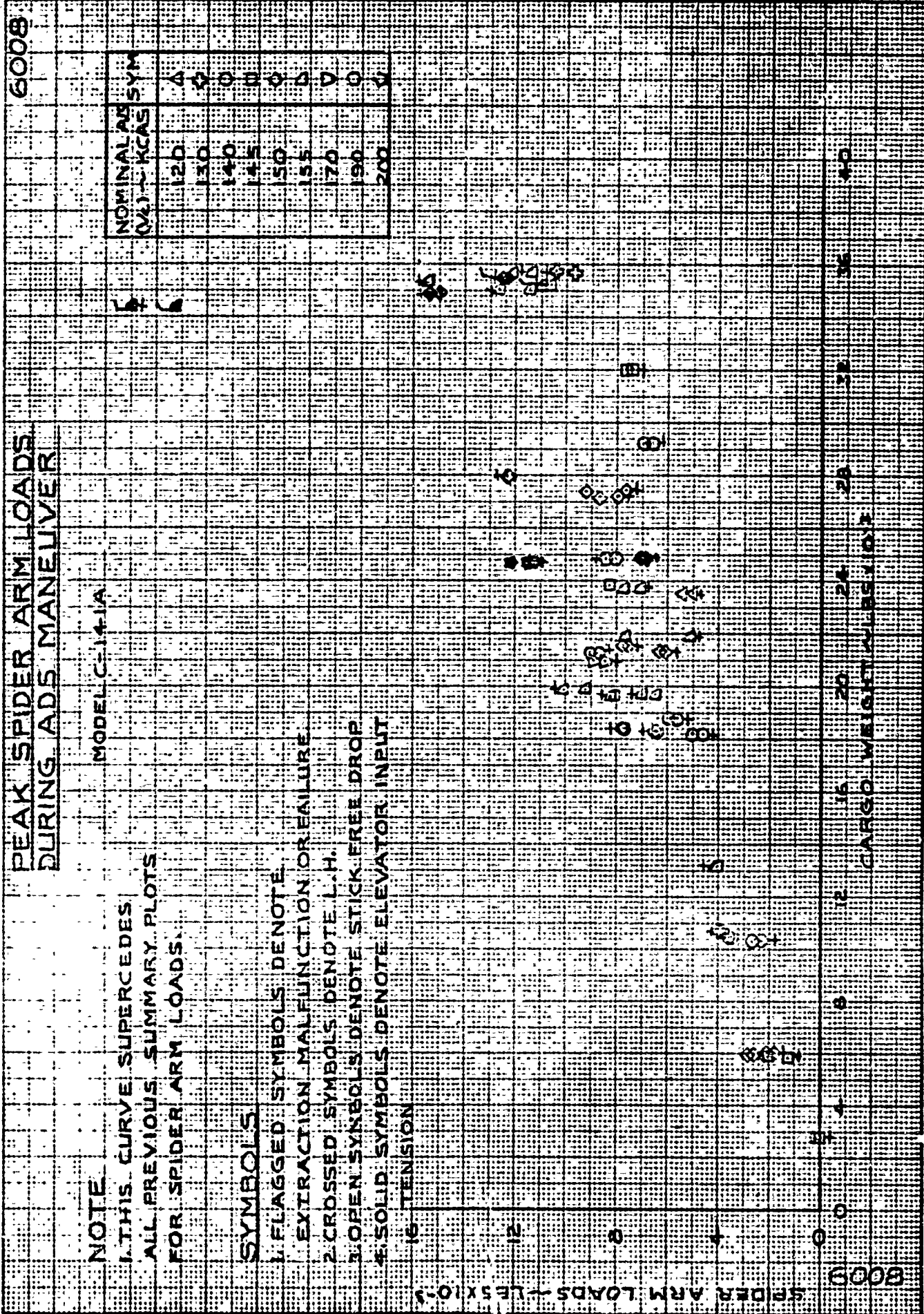
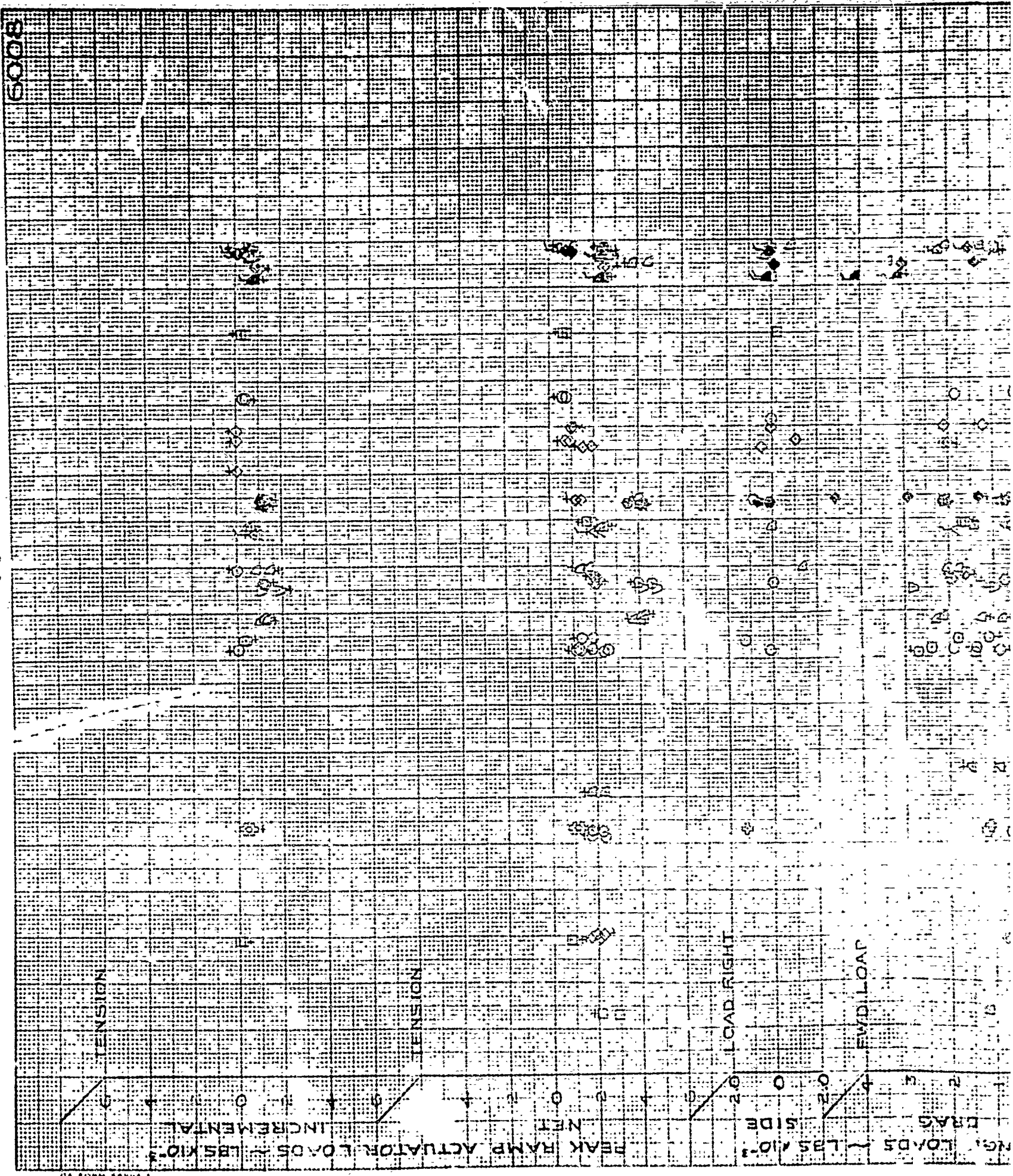


FIGURE 1.28

6009



PREPARED BY: **MBH**
 DATE: _____
 CHECKED BY: _____

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **TR 5473**
 MODEL **C-141A**
 PAGE **4-72**

PEAK LOADS DURING ADS MANEUVER RAMP ACTUATOR-RAMP HINGE

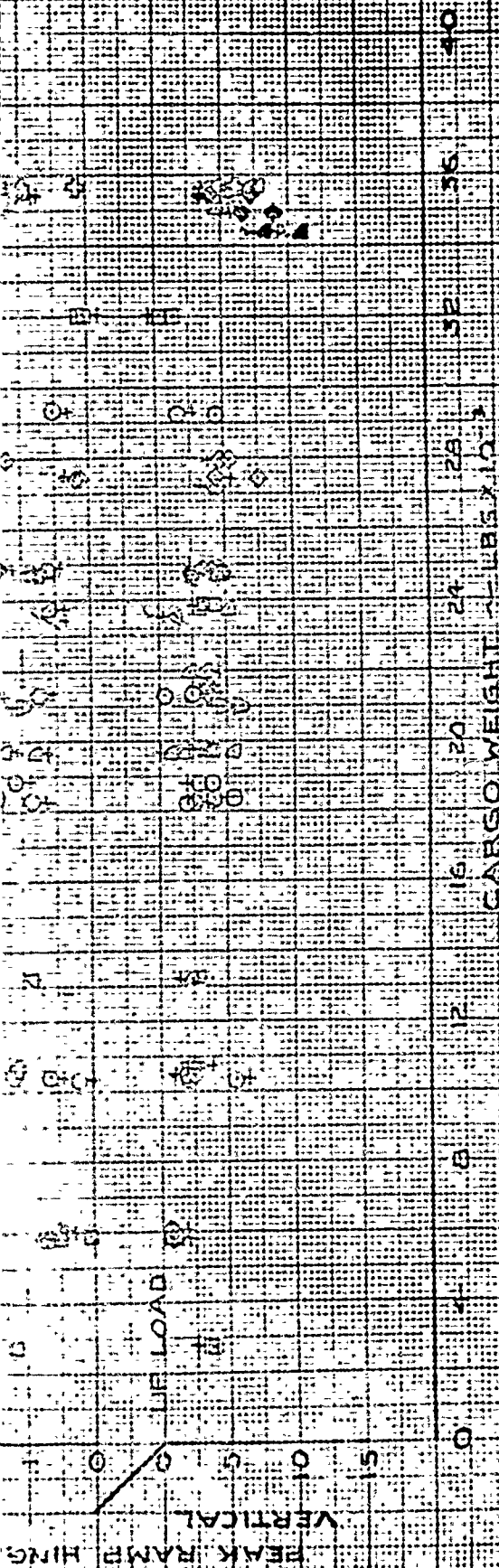
MODEL C-141A

NOTE

THIS CURVE SUPERCEDES ALL PREVIOUS
 SUMMARY PLOTS FOR RAMP ACTUATOR
 AND RAMP HINGE LOADS.

SYMBOLS

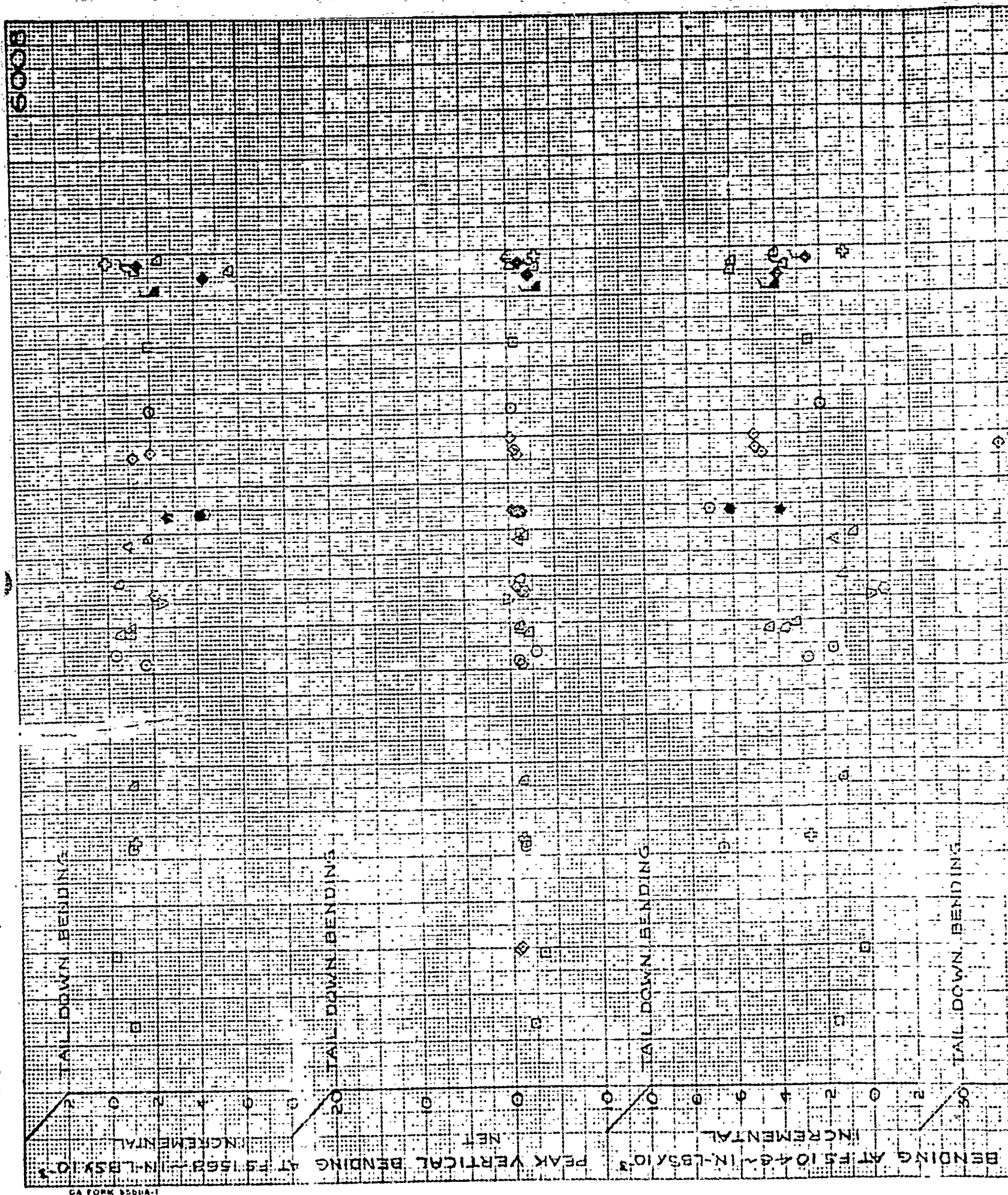
1. FLAGGED SYMBOLS DENOTE EXTRACTION
 SYSTEM MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.
4. CROSSED SYMBOLS DENOTE L.H.



NOMINAL WS (W ₀ - KCAS)	SYM
120	A
130	B
140	C
145	D
150	E
155	F
170	G
180	H
200	I

FIGURE 4-29

6009



PREPARED BY MBH

DATE

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LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO.

ER 5473

MODEL

C-141A

PAGE

4-73

PEAK LOADS DURING ADS MANEUVER AT FS 1048 - FS 1568

MODEL C-141A

NOTE

THIS CURVE SUPERCEDES ALL PREVIOUS
SUMMARY PLOTS FOR VERTICAL BENDING
AT FS 1048 AND FS 1568

SYMBOLS

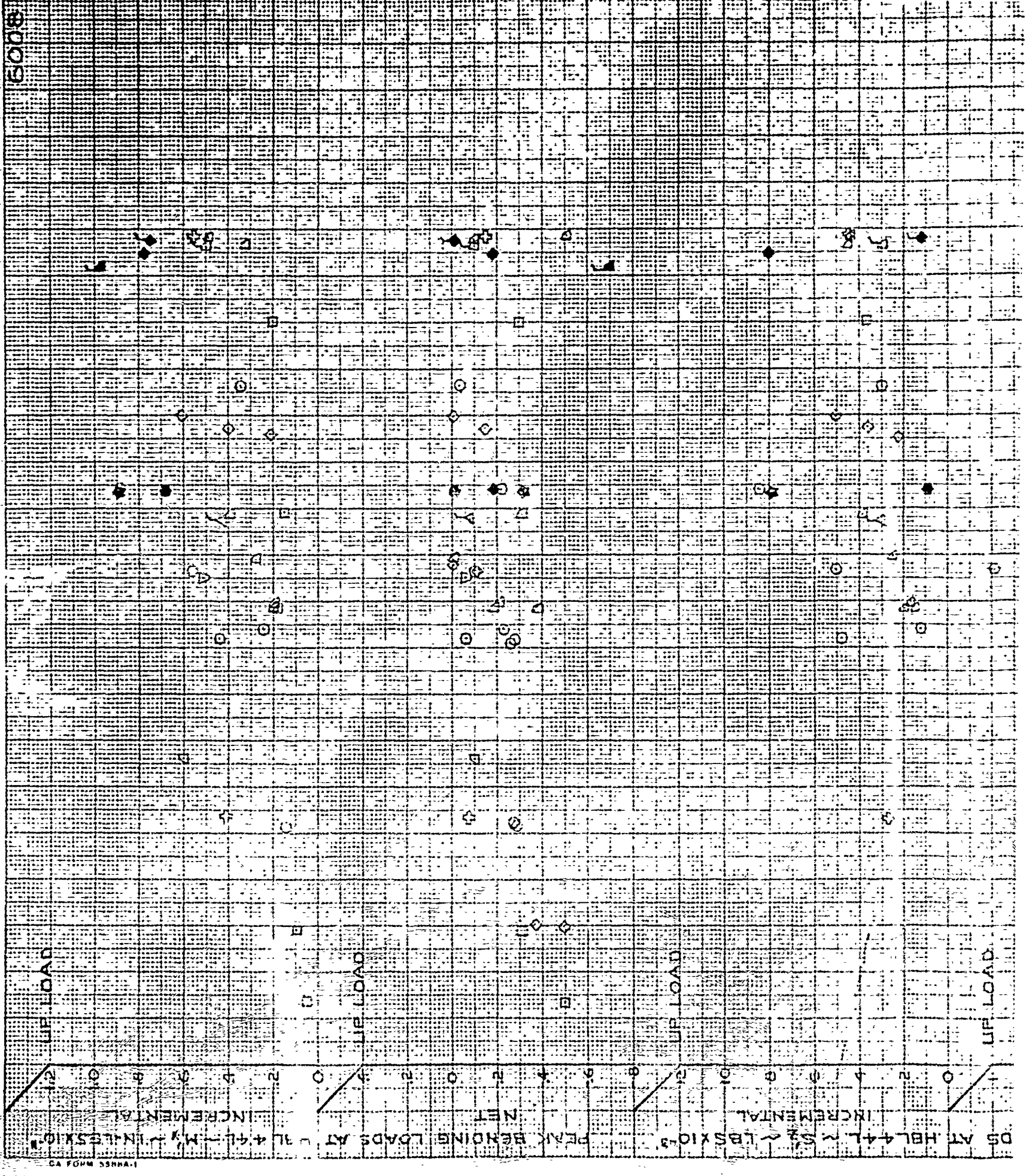
1. FLAGGED SYMBOLS DENOTE EXTRACTION
SYSTEM MALFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.

NOMINAL A/C (VO - KCAS)	YM
25	A
30	B
35	C
40	D
45	E
50	F
55	G
60	H
65	I
70	J
75	K
80	L
85	M
90	N
95	O
100	P
105	Q
110	R
115	S
120	T
125	U
130	V
135	W
140	X
145	Y
150	Z
155	AA
160	AB
165	AC
170	AD
175	AE
180	AF
185	AG
190	AH
195	AI
200	AJ

FIGURE 4-30

6008





6008

PREPARED BY: MMH

DATE: _____

CHECKED BY: _____

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE 4-74

PEAK LOADS DURING ADS MANEUVER SHEAR AT HBL 44L BENDING AT HBL 44L

MODEL C-141A

NOTE

THIS CURVE SUPERCEDES ALL PREVIOUS
SUMMARY PLOTS FOR SHEAR AND
BENDING LOADS AT HBL 44L.

SYMBOLS

1. FLAGGED SYMBOLS DENOTE EXTRACTION
SYSTEM MALEFUNCTION OR FAILURE.
2. OPEN SYMBOLS DENOTE STICK FREE DROP.
3. SOLID SYMBOLS DENOTE ELEVATOR INPUT.

NOMINAL A/S (GROSS WT)	SYM
120	○
130	○
140	○
145	○
150	○
155	○
170	○
190	○
200	○

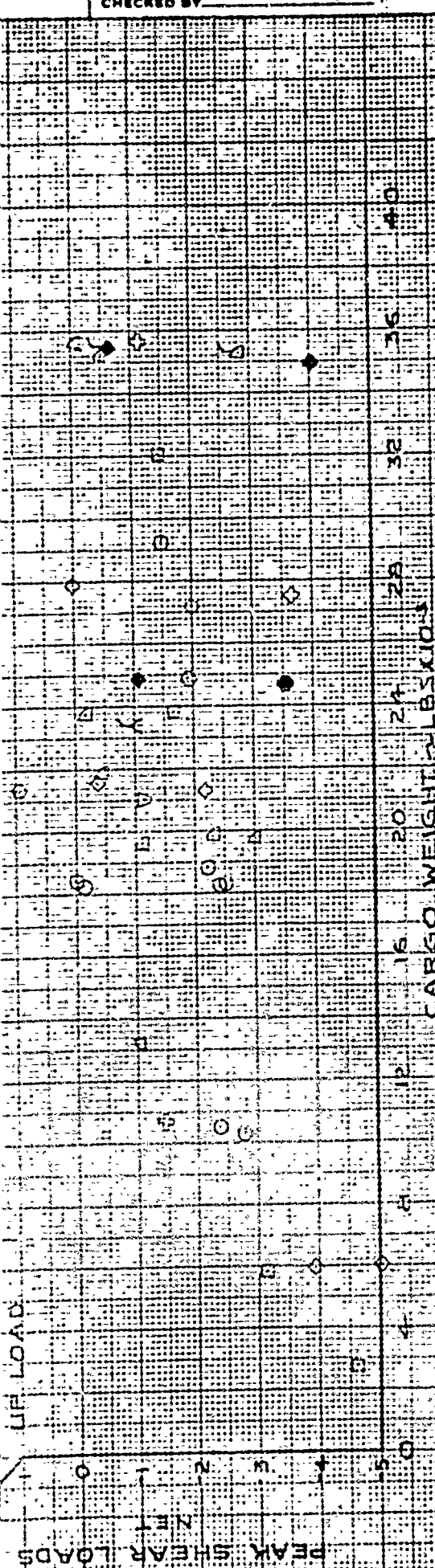


FIGURE 4-31

8009

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REPORT NO. EG 5473
 MODEL C-141A
 PAGE 8.75

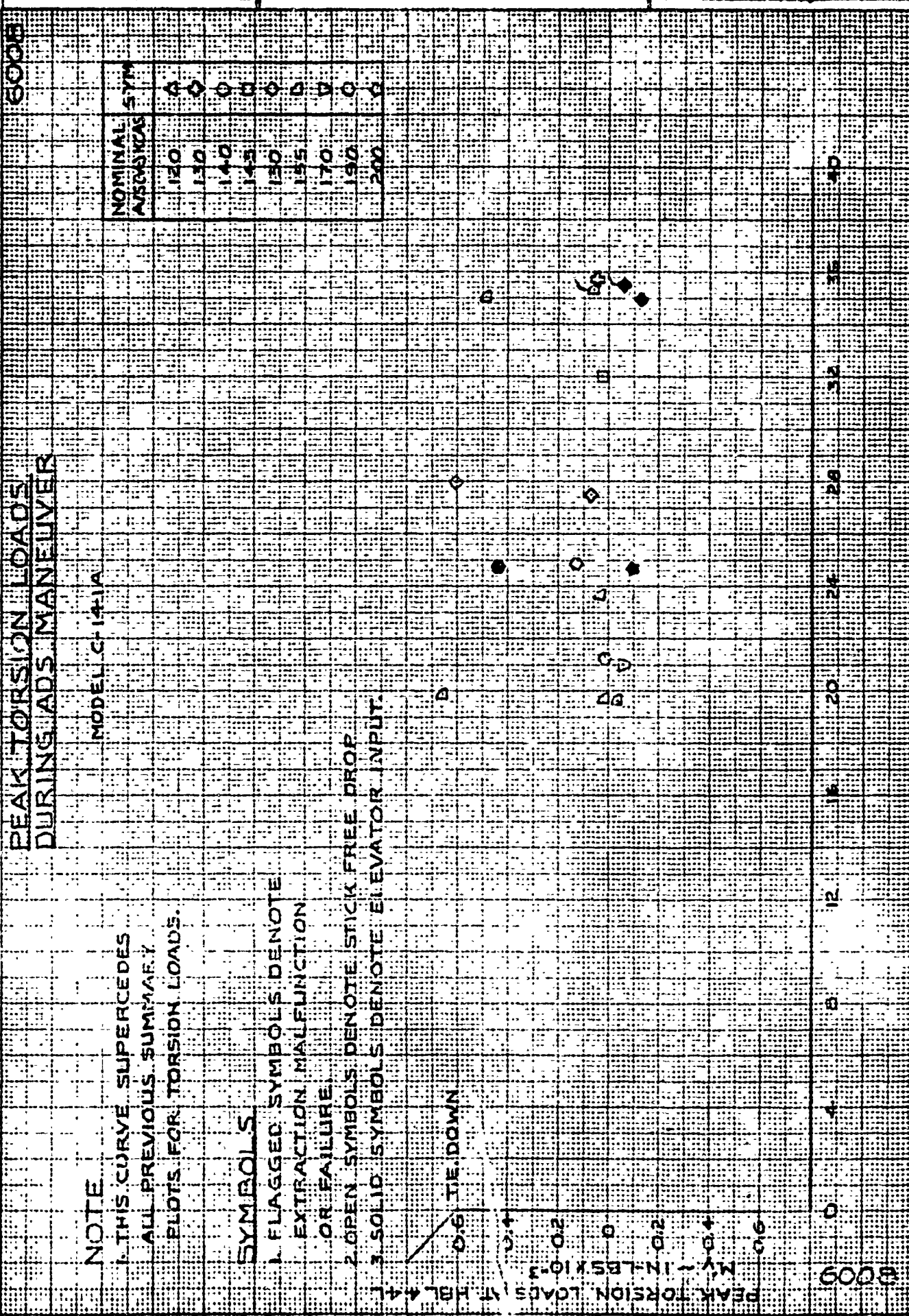


FIGURE 4.12

PREPARED BY WLP
 DATE 1-17-66
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REPORT NO. ER 5473
 MODEL C-241A
 PAGE 4.76

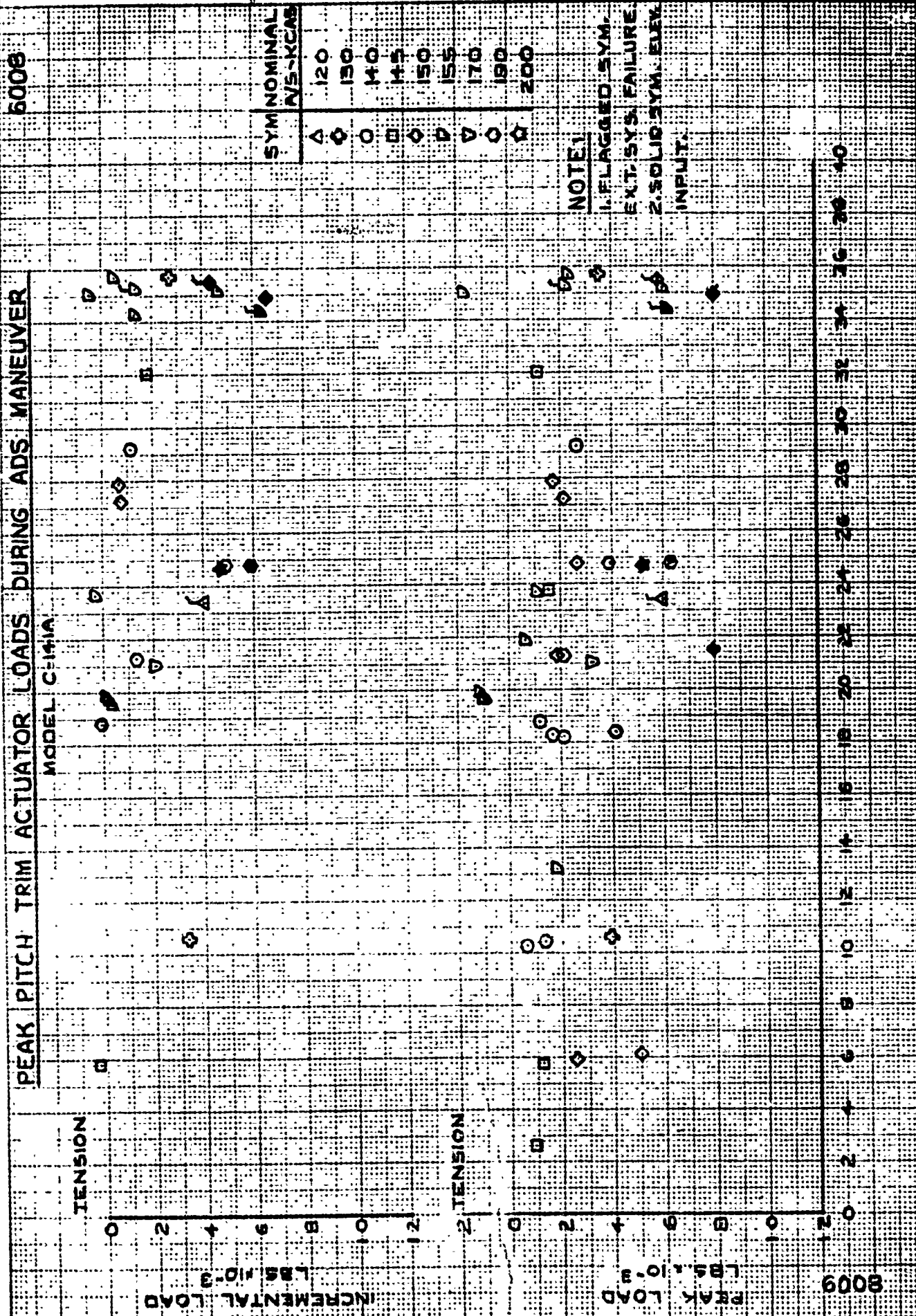


FIGURE 4.18

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

5.1.1 Personnel Delivery

1. The capability of simultaneous discharge of single and 7 dummies per stick from both paratroop doors has been demonstrated from 120 to 200 KCAS.
2. Retrieval of a "hung dummy" from the paratroop door using the standard retriever winch and bar has been successfully demonstrated at 130 KCAS.
3. The discharge of single and 7 dummies per stick from the cargo ramp has been demonstrated from 180 to 200 KCAS with the ramp air deflectors installed.
4. Retrieval of a "hung dummy" from the cargo ramp has been demonstrated at 130 KCAS, but results indicate a live subject would have been seriously injured in the process.
5. Simultaneous airdrop of personnel from the cargo ramp and paratroop doors is not feasible in the present configuration.

5.1.2 Extraction System

1. The minimum extraction line length should be that length which positions the connecting link between the extraction chute risers and the extraction line at least 33.5' aft of the tail cone.
2. A 140' line length would be satisfactory for use with cargos located at any position inside the cargo compartment.
3. Extraction lines should be of continuous length without metal connector links located inside the cargo compartment.
4. The 15'D₀ and 22'D₀ ring slot extraction parachutes are satisfactory for deployment up to 150 KCAS.
5. The 28'D₀ ring slot extraction parachute is satisfactory for deployment up to 140 KCAS.
6. The 32'D₀ fist ribbon parachute is satisfactory for deployment up to 170 KCAS.
7. The 24'D₀ reinforced ring slot parachute is satisfactory for deployment up to 190 KCAS.
8. Extraction parachutes should not be employed in a reefed configuration at speeds above their unreefed airspeed limits.
9. A single component failure (parachute, extraction line, clevis, etc.) can precipitate total loss of extraction force

from the extraction system in its present configuration.

10. The present ADS modular platform is unsatisfactory for air dropping unit loads greater than 25,000 pounds from the C-141A.

5.1.3 Cargo Airdrops

1. Complete airplane capability has been demonstrated to
 - a. airdrop unit loads up to 25,000 pounds at speeds up to 200 KCAS.
 - b. airdrop unit loads up to 35,000 pounds at speeds up to 160 KCAS (platform damage can be expected for extraction rates below 0.8g and may be severe enough to cause roller damage).
 - c. sequentially airdrop as many as seven separate cargos up to a total weight of 71,100 pounds at 150 KCAS.
2. The Aerial Delivery Subsystem performed reliably. The automatic release feature employing pre-set load restraint against the extraction parachute force proved acceptable for use after the restraint lock setting chart was revised.
3. The extraction parachute initiation system was demonstrated to perform reliably.
4. The ARNAV tank can be successfully airdropped from the C-141A without producing any contact with the airplane structure even under low extraction rates.

5. All airplane flight loads with the petal doors in the "no strake" configuration will be within allowable limits.
6. The C-141A has the capability to airdrop unit loads in excess of 35,000 pounds provided a suitable platform can be provided and a nominal 1.0g extraction rate can be assured.

5.1.4 Petal Door Load Survey

1. Complete removal of the petal door strake gives the optimum balance between the most critical tension and compression petal door loads.
2. Slight restrictions in flap settings and/or airspeed may be necessary for the intermediate door position with the strake removed.
3. Positioning the petal doors to a more closed position provides additional compression load relief and adequate cargo envelope clearance is available at the 55° door position with the strake removed.
4. Ramp air defectors aggravate the most critical petal door loads in sideslip.

5.2 Recommendations

5.2.1 Personnel Delivery

1. The minimum airspeed for troop drops should be not less than $1.3V_S$ with a cargo deck angle between 0° and 4° nose up.
2. No troop jumps employing a static line should be made from the cargo ramp until additional cargo ramp dummy retrieval tests are accomplished.

5.2.2 Extraction System

1. If a standardized extraction line length is desired, it should be a continuous 140' line.
2. No metal connector links between extraction line components should be located inside the cargo compartment.
3. An extraction parachute should be developed which would be suitable for airdropping unit loads up to 35,000 pounds at airspeeds up to 160 KCAS.
4. An aerial delivery platform should be developed which would sustain without damage the loads incurred from airdropping unit loads up to 35,000 pounds at extraction rates of 0.25g.
5. Additional flight test should be conducted to demonstrate accomplishment of items 3 and 4 above.

6. The SPO should give consideration to the development of an extraction system which is not totally vulnerable to a single component failure.

5.2.3 Cargo Airdrops

1. A follow-on program should be conducted for unit loads of 35,000 pounds at speeds above 160 KCAS as soon as the present extraction system deficiencies have been corrected.
2. This follow-on program should include a consideration of low extraction rates corresponding to the abortive drop case.
3. A computer aided analysis of the data obtained during the ADS System Tests should be initiated and the results made available prior to the follow-on program.

5.2.4 Petal Door Load Survey

1. The petal door strake should be removed from all C-141A aircraft.
2. Ramp air deflectors should not be used on the C-141A aircraft.

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. ER 5473
MODEL C-141A
PAGE A-1

APPENDIX A

SUMMARY of PERSONNEL DELIVERY DRO

AF 638077

TABLE A-1

FLIGHT NO	DATE	ER5453 REF.	AIRPLANE DATA					DOOR POSITION			DUMM / CHUTE	
			GW LBS	CG % MAC	Vc KCAS	Hpc FEET	FLAP POS.	PETAL DOOR POS.	PARA. DOOR POS.	PARA. SPOILER POS.	TYPE CHUTES	EXT. LINE LENGTH FEET
87	3-25-65	7.4.1a	197900	NA	120	5000	34°	CLOSED	R & L OPEN	EXTEND.	T-10 35' D.	15'
					135		29°					
					150		27°					
					200		14°					
		7.4.1b			120		34°		LH OPEN			
89	3-26-65	7.4.1b	197800		135		29°		R & L OPEN			
		7.4.2a			120		33°	38°	CLOSED	RETRACT		
					135		29°	38°	CLOSED	RETRACT.		
					200		14°	38°	CLOSED	RETRACT.		
90	3-29-65	7.4.1b	197900		150		27°	CLOSED	R & L OPEN	EXTEND.		15 & 25
		7.4.2b			120		33°	38°	CLOSED	RETRACT		15
91	3-30-65	7.4.1b	197900		200		14°	CLOSED	R & L OPEN	EXTEND.		15 & 25
		7.4.2b			130		29°	38°	CLOSED	RETRACT		15 & 25
		7.4.3a			130		29°	CLOSED	LH OPEN	EXTEND.		15
92	3-31-65	7.4.2b	196500		200		14°	38°	CLOSED	RETRACT		
		7.4.2c			130		29°	60°	CLOSED	RETRACT.		
					130		29°	38°	R & L OPEN	EXTEND.		
		7.4.4			130		29°	38°	R & L OPEN	EXTEND.		
115	4-27-65	7.4.4	181500		130	2500	36°	38°	R & L OPEN	EXTEND.		19
					130		36°	60°	R & L OPEN	EXTEND.		19
					130		36°	60°	R & L OPEN	EXTEND.		19
116	4-29-65	7.4.1b	183200		130		36°	CLOSED	R & L OPEN	EXTEND.		15
124	5-13-65	7.4.4b	190400		140	2500	28°	60°	CLOSED	RETRACT		
					140		28°	60°	CLOSED	RETRACT		
135	6-2-65		176500		130		29°	CLOSED	R & L OPEN	EXTEND		

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A-2

CHARACTERISTICS			DUMMIES/EXIT		TOTAL NO DUMMIES	COMMENTS		
LINE GTH ET	TYPE DUMMY	WEIGHT LBS	PARA. DOOR.	RAMP				
	ROPE HEAD	140	1 RH 1 LH	—	2	DUMMIES ALL FALL CLEAR OF A/C - GOOD DROPS - NO A/P RESPONSE		
				—	2	GOOD DROP - NO CONTACT WITH A/C NO A/C RESPONSE		
				—	2	GOOD DROP - NO A/C RESPONSE		
				—	2	GOOD DROP - NO A/C RESPONSE		
			STICK OF 5	—	5	SEQUENCE DISCHARGE OF 1 STICK OF 5 DUMMIES ALL FALL CLEAR OF A/C		
			STICK OF 7 R-L	—	14	STICK DROP - ALL 7 DUMMIES FALL CLEAR OF A/C - NO CONTACT WITH A/C		
	TORSO	200	—	1	1	DUMMY FALLS CLEAR OF A/C - CHUTE CLEARS A/C - NO CONTACT		
	TORSO	200	—	1	1	SAME AS ABOVE		
	ROPE HEAD	140	—	1	1	SAME AS ABOVE		
25			STICK OF 7 R-L	—	14	ALL CLEAR A/C OKAY - NO CONTACT		
5			—	STICK OF 7	7	RETRIEVAL CABLE BROKE ON RH STATIC WINCH DUMMIES CLEAR A/C OK - NO CONTACT		
25			STICK OF 7 R-L	—	14	DUMMY HUNG UPON LH SIDE - RETRIEVED OK ALL OTHERS CLEAR A/C		
25			—	STICK OF 7		BAGS TEND TO BUNCH TOGETHER @ LH AFT LOCK DUMMIES ALL FALL CLEAR		
5			1	—	1	INTENTIONAL HANG UP - RETRIEVAL OKAY		
			—	STICK OF 7	7	ALL DUMMIES FALL CLEAR - STATIC LINES SLAP (ROUGHLY) RH PETAL DOOR		
			—	STICK OF 7	7	ONE HANG UP - HIT UNDERSIDE OF TAIL FAIRING LH DOOR - DUMMY UNSTABLE		
			1 RH ONLY	—	1	PARACHUTE BRUSHES DOOR CORNER		
			1 RH 1 LH	1	3	GOOD DROP - ALL CLEAR A/C		
9			1 RH 1 LH	1	3	DUMMIES FALL CLEAR - 4' EXT. ON STND LINE RH BAGS HIT RH PETAL DOOR - DAMAGE DOOR LE.		
9			1 RH ONLY	—	1	GOOD DROP - NO CONTACT - TOP 22 HOLES BLOCKED ON PARA. DOOR SPOILED		
9			1 RH 1 LH	2	4	GOOD DROP - FEEL AIRFLOW MORE STRONGLY		
15			STICK OF 7 R-L	—	14	STATIC LINES RUB UPPER REAR PARATROOP DOOR RADIUS		
			—	1 OFF LH SIDE	1	HANG UP & RETRIEVAL - DUMMY HIT LH PETAL DOOR & UNDERSIDE OF CEILING - HITS RAMP ON RETRIEVAL		
			—	1 OFF RH SIDE	1	RH SIDE SAME AS ABOVE - RETRIEVAL STARTED AFTER 10-SEC - HIT DOOR 4 TIMES, CEILING ONCE		
			4 LH 56 LINES LH	—	4 DUMMIES 56 LINES	PROCEDURE: ① DISCHARGE 1 DUMMY, 28 STATIC LINES, AND A 2ND DUMMY OFF LH INBD ANCHOR LINE, ② THEN DISCHARGE 1 DUMMY, 28 STATIC LINES, AND A SECOND DUMMY OFF LH OUTBD ANCHOR LINE. ③ RETRIEVE ALL 60 LINES USING RETRIEVAL WINCH. DUMMIES ALL FALL CLEAR - LINES BUNCH TOGETHER - RIDE WELL - NOT TOO HIGH NO INTERFERENCE.		

FIGURE A-1

SUMMARY of PARACHUTE TOW TEST

AF 63-8077

TABLE A-2

FLIGHT NR	DATE	EIC 5453 REF.	AIRPLANE DATA				EXTRACTION LINE			EXTRACTION		
			GW LBS.	C.G. %MAC	V _c KCAS	H _{pc} FEET	FWD END & FUS. STA	LINE LENGTH FEET	LINE TYPE	NR CHUTES	SIZE CHUTE	TYPE CHUTE
73	3-4-65	7.22.3	190000	NA	149.5	4880	1271	80	TYPE XXVI 8-PLY	1	15' D ₀	RING S
			180000		149.5	4890		80		1	22' D ₀	
			175000		149.5	4940		80		1	28' D ₀	
74	3-5-65		190000		160.0	4940		60		1	22' D ₀	
			185000		159.5	4930		80		1	22' D ₀	
			170000		160.0	4910		80		1	22' D ₀	
75	3-5-65		195000		158.5	4840		80		1	28' D ₀	
			193000		161.5	4900		80		1	28' D ₀	
			180000		159.5	4900		80		1	28' D ₀	
76	3-8-65		190000		117.0	4840	1260	100		1	32' D ₀	FIS RIBB
			190000		126.0	4950		100		1	28' D ₀	RING
			190000		138.5	4910		80		1	32' D ₀	FIS RIBB
80	3-17-65		190000		127.0	4950		80		1	22' D ₀	RING
			185000		130.0	4950		100		1	22' D ₀	
			180000		139.5	5020		100		1	22' D ₀	
81	3-18-65		190000		139.5	4900		80		1	28' D ₀	
			190000		156.5	4940		100		1	28' D ₀	
			180000		138.5	4890		100		1	32' RFD TO 24'	FIS RIBB
			170000		138.5	4930		100		1	32' D ₀	
83	3-19-65		190000		160.5	4820		80		1	32' D ₀	
			190000		181.5	4870		100		1	32' RFD TO 24'	
			180000		134.5	5020		100		2	28'	RING
			170000		151.0	4940		100		2	22'	RING
84	3-27-65		195000		185.5	4920		80		1	32' RFD TO 24'	FIS RIBB
			190000		171.5	4910		80		1	32' D ₀	FIS RIBB
85	3-30-65		187000		139.0	4920		80		1	28' D ₀	RING
122	5-11-65		191000		134.5	2480	1172	140	TYPE X 2 PLY	1	15' D ₀	
			180000		139.0	2470		140	TYPE X 6 PLY	1	22' D ₀	
			175000		138.0	2480		140	TYPE X 8 PLY	1	28' D ₀	
124	5-13-65		180000		138.0	2540	926	140	TYPE X 2 PLY	1	15' D ₀	
152	7-14-65		177400		170.0	2500	1220	100	TYPE XXVI 8 PLY	1	24' D ₀	REIN RING
154	7-19-65		172700		172.0	2560		80		1	24' D ₀	REIN RING
156	7-21-65		197000		123.5	2540		80		1	22' RFD TO 9'	RING
159	7-16-65		192000		132.5	2550		80		1	22' RFD TO 9'	RING
			190000		134.5	2550		80		1	22' RFD TO 9'	RING
187	9-28-65		195000		202.5	1720	1160	80	TYPE XXVI 10 PLY	1	24' RFD TO 16'	REIN RING

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CHUTE		FLAP POSITION	COMMENTS
TYPE	PEAK LOAD LBS.		
ING SLOT	5350	26°	CHUTE RIDES STABLE - LINE CLEARS STRUCTURE - NO TRIM CHANGE LITTLE PWR. CHANGE
	15110	26°	CHUTE RIDES HIGHER - VERY STABLE - LINE CLEARS A/P NO CHANGE IN PITCH OR PWR
	23630	26°	NORMAL EXTRACTION - CHUTE VERY STABLE SMALL PWR. CHANGE TO HOLD A/S
	16160	26.5°	NO PWR. CHANGE - SLIGHT PITCH CHUTE VERY STABLE
	15230	26.5°	GOOD DEPLOYMENT - CHUTE VERY STABLE, VERY LITTLE ROTATION SLIGHT HORIZ. MOVEMENT - NO PITCH DOWN FELT BY PILOT
	15700	26.5°	CHUTE RIDES VERY STABLE - NO PWR CHANGE NO PITCH, MOTION FELT BY PILOT
	25310	26.5°	NO PWR CHANGE - SLIGHT DROP IN A/S - CHUTE RIDES HIGH BUT STABLE LINES RIDE CLEAR OF A/C - SMALL ELEV. INPUT
	27240	26.0	NORMAL DEPLOY. CHUTE VERY STABLE - NO CHANGE IN PWR - SPEED REMAINS CONSTANT - SMALL ELEV. INPUT
	25800	26.5°	NORMAL DEPLOY. CHUTE VERY STABLE - PWR APPLIED TO MAINTAIN A/S - SMALL ELEV. INPUT - SLIGHT PITCH DOWN
FIST RIBBON	17300	35°	GOOD DEPLOYMENT - CHUTE VERY STABLE - NO PWR CHANGE SLIGHT DROP IN A/S - SMALL ELEV. INPUT - SLIGHT PITCH DOWN
ING SLOT	18000	NA	CHUTE VERY STABLE -
FIST RIBBON	53000	14.5°	CHUTE DEPLOYMENT OK - EXTRACTION LINE FAILS AND DAMAGES RUDDER AND RUDDER BOOST PAIRING - NO PWR OR SPEED CHANGE - CHUTE WAS NOT REEFED
ING SLOT	10650	29°	CHUTE VERY STABLE - RIDES HIGH - NO PWR CHANGE - SLIGHT A/S DROP
	12340	29°	NORMAL DEPLOYMENT - CHUTE VERY STABLE - NOT QUITE AS HIGH AS ABOVE NO PWR CHANGE - A/S CONSTANT - NO PITCH DOWN
	22140	24°	SAME AS ABOVE
	23100	28°	NORMAL RELEASE AND DEPLOY. CHUTE RIDES HIGH BUT STABLE - SLIGHT ELEV. INPUT - NO PWR CHANGE - SLIGHT PITCH DOWN
	27050	26°	CHUTE VERY STABLE - RIDES HIGHER THAN ABOVE - NO PWR CHANGE NO PITCH DOWN - NO ELEV. INPUT
FIST RIBBON	15200	29°	SAME AS ABOVE
	31300	29°	CHUTE VERY STABLE - NOTICEABLE PITCH DOWN - PWR INCREASED ON OB. ENGINES.
	31100	25°	NORMAL RELEASE AND DEPLOYMENT - CHUTE RIDES HIGH BUT STABLE. PWR INCREASED ON OB. ENGINES - NO EFFECT ON CHUTE STABILITY. NO PITCH DOWN
	24170	19°	CHUTE VERY STABLE - PWR HELD CONSTANT - SLIGHT PITCH DOWN SLIGHT DECREASE IN A/S
ING SLOT	37520	29°	SAME AS ABOVE CHUTE RIDES ONE ABOVE THE OTHER
ING SLOT	28310	26°	SAME AS ABOVE
FIST RIBBON	25530	17°	GOOD DEPLOYMENT - CHUTE VERY STABLE - RIDES HIGH - PILOT REPORTS SLIGHT NOSE DOWN PITCH - NO PWR CHANGE - SMALL ELEV. INPUT
FIST RIBBON	40570	19°	NORMAL DEPLOYMENT - CHUTE GORE BLEW - CHUTE RODE LOW NO PITCH DOWN NOTICED - NO PWR CHANGE - SLIGHT A/S DROP
ING SLOT	20720	29°	CHUTE STABLE - PWR INCREASED TO MAINTAIN A/S - SMALL DROP IN AIRSPEED - NO PITCH DOWN NOTICED.
	6080	28.5°	EXTRACT. LINES 60+60+20 FOOT LENGTHS - ALL LINKS OUTSIDE A/C. CHUTE VERY STABLE - RIDES HIGH - NO PWR CHANGE - SLIGHT PITCH DOWN - A/S CONSTANT
	13490	28.5°	EXTRACT. LINES SAME AS ABOVE - CHUTE STABLE BUT RIDES LOW SLIGHT PITCH DOWN - A/S DROPS 10 KNOTS
	23600	28.5°	EXTRACT. LINES SAME AS ABOVE - CHUTE STABLE BUT RIDES LOW NO PWR CHANGE - NO PITCH DOWN - SPEED DROP OF 5 KNOTS
	6500	28.4°	EXTRACT. LINE 100+40 FOOT LENGTHS - LINE HITS A/C IN TAIL AREA APPROX. 60' OUT - NO DAMAGE - CHUTE HAS SLIGHT OSCILLATIONS
REINF'D RING SLOT	23890	22.0°	
REINF'D RING SLOT	28660	19.0°	
RING SLOT	7440	32.0°	
RING SLOT	8920	32.0°	1st PASS
RING SLOT	6800	33.2°	2nd PASS
REINF'D RING SLOT	21740	32.8°	SATISFACTORY - SLIGHT ELLIPTICAL SHAPE WHEN TOWED

FIGURE A-2

SUMMARY of INDIVIDUAL CARGO DRO

TABLE A-3
AF 63-8077 C-1

LIGHT NO	DATE	ERS453 REF.	AF DROP NO	AIRPLANE DATA BEFORE DROP				CARGO DESCRIPTION				
				GW LBS	C.G. %MAC	SPEED KCAS	H _h FEET	WEIGHT LBS	C.G. POS. FUS. STA.	AFT END FUS. STA.	LENGTH INCHES	HEIGHT INCHES
93	4-1-65	7.3.1.2	0813	166100	29.6	145.5	4900	5840	864	912	96	49
94	4-2-65	7.3.1.3	0915	170500	28.5	131.0	2415	10650	832	904	144	65
95	4-6-65	7.3.1.4	0916	169200	28.0	139.0	4960	10300	851	971	240	65
96	4-6-65	7.3.1.5	0917	170620	27.4	140.5	4910	10450	824	893	144	65
98	4-9-65	7.3.1.1	0812	161800	29.8	143.0	4970	2640	912	958	96	49
99	4-12-65	7.3.1.6	0919	169300	25.8	153.5	4925	13200	812	883	144	70
100	4-13-65	7.3.1.7	1012	177970	26.2	139.0	4890	18250	835	903	192	75
101	4-14-65	7.3.1.8	1013	179190	26.7	139.0	4940	18820	847	941	192	75
102	4-15-65	7.3.1.9	1014	177700	26.6	140.0	4940	18330	847	940	192	75
103	4-16-65	7.3.1.10	1015	178270	26.2	138.0	4920	18400	847	940	192	75
108	4-20-65	7.3.1.11	1016	184200	26.4	152.5	4935	21900	858	947	192	80
111	4-21-65	7.3.1.12	1089	181050	26.3	142.5	4940	23830	866	981	240	80
112	4-22-65	7.3.1.13	1090	185300	26.2	151.5	2425	27190	873	988	240	90
117	4-30-65	7.3.1.14	1091	187900	26.8	N.A.	N.A.	27450	878	992	240	90
118	5-4-65	7.3.1.15	1329	189100	26.5	150.5	2415	27930	876	991	240	90
119	5-5-65	7.3.1.16	1205	188200	26.3	140.0	4865	29250	879	1061	288	48
120	5-6-65	7.3.1.17	1206	191600	25.9	142.5	4970	32030	877	1045	288	48
121	5-10-65	7.3.1.18	1330	191100	26.2	152.0	5000	35540	889	1055	288	48
123	5-12-65	7.3.1.21	1365	180100	33.4	148.5	4950	21350	1018	1114	192	85
127	5-17-65	7.3.1.23	1395	166900	24.0	149.5	4970	6060	537	585	96	80
128	5-18-65	7.3.1.24	1396	181500	19.5	151.5	4970	21550	699	787	192	90
129	5-19-65	7.3.1.26	1397	182600	19.5	119.5	5010	23440	887	1002	240	99
130	5-20-65	7.3.1.19	1366	195500	26.4	153.5	4925	35710	887	1055	288	58
136	6-3-65	7.3.1.34	1576	185600	27.5	149.0	4975	24830	884	1011	240	99
137	6-4-65	7.3.1.35	1575	163800	24.8	151.0	4985	5940	592	689	192	61
138	6-7-65	7.3.1.25	1546	194200	19.2	156.5	5055	35250	780	945	288	48
139	6-8-65	7.3.1.22	1543	195300	33.3	154.0	5010	34400	987	1145	288	101
141	6-14-65	7.3.1.27	1398	187200	18.7	157.0	5025	23750	717	831	240	94
142	6-15-65	7.3.1.20	1547	195400	26.2	149.5	4990	34960	881	1044	288	51
143	6-18-65	7.3.1.29	1610	195900	19.5	134.0	4950	35700	781	916	288	90
144	6-22-65	7.3.1.32	1651	276200	28.8	153.0	5015	35335	1090	1225	288	95
145	6-24-65	7.3.1.37-2	1652	201000	33.6	148.0	5065	34800	1022	1154	88	98
		7.3.1.37-1		162000	27.8	149.0	5100	9450	813	860	96	72
146	6-28-65	7.3.1.38-2	1653	216900	33.8	142.0	5080	34100	1074	1239	88	88
		7.3.1.33-1		182000	24.7	142.0	5190	22450	816	908	192	80
148	6-30-65	7.3.1.31-2	22...	225100	33.5	151.5	5045	35030	1099	1235	288	90
				190070	23.0	151.5	5040	29600	815	929	240	85

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CARGO CHUTE DATA			EXTRACTION CHUTE DATA				EXTRACT			
EIGHT INCHES	NR	DIA. & TYPE	EXT. LINE LENGTH FEET	EXT. LINE TYPE	NR CHUTES & DIAM.	TYPE CHUTE	PEAK FORCE LBS.	AVG. RATIO DESIRED	AVG. RATIO MEAS'D	PEAK RATIO MEAS'D
49	2	100' 1/2" 11A	100	2 PLY TYPE 26	1-15'	RING SLOT	5000	1.0	0.55	0.86
65	3			8 PLY TYPE 26	1-22'		13000	1.0	0.85	1.22
65	3				1-32' REEFED 2A'	RIBBON	17100	1.5	1.00	1.66
65	3				2-15'	RING SLOT	7740	0.5	0.60	0.74
49	1			2 PLY TYPE 26	1-15'		3880	1.0	1.25	1.47
70	4			8 PLY TYPE 26	1-22'		14330	1.0	0.90	1.08
75	5				2-32' REEFED 2A'	RIBBON	24000	1.5	0.95	1.26
75	5				1-28'	RING SLOT	22050	1.0	0.85	1.17
75	5				1-22'		13120	0.5	0.61	0.72
75	5				2-15' REEFED 12		8840	0.25	0.35	0.48
80	6				1-28'		23360	1.0	0.85	1.07
80	6				2-22'		32360	1.0	0.90	1.36
90	7				2-22'		27590	1.0	0.75	1.01
90	7				1-22'		15350	0.5	0.49	0.56
90	7				2-15'		9020	0.25	0.30	0.32
48	7				2-28'		36920	1.0	0.99	1.26
48	8				2-28'		35860	1.0	0.86	1.12
48	8				2-28'		47200	1.0	0.84	1.33
85	6		140	8 PLY TYPE 10	1-28'		23600	1.0	0.89	1.11
80	2		140	2 PLY TYPE 26	2-15'		7640	1.0	0.96	1.26
90	6		140	8 PLY TYPE 26	1-28'		23300	1.0	0.88	1.30
99	6		140	8 PLY TYPE 26	2-28'		28340	1.0	0.84	1.21
58	8		100	8 PLY TYPE 26	1-28'		31230	0.5	0.67	0.87
99	6		140	8 PLY TYPE 10	1-28'		21430	1.0	0.75	0.86
61	2		140	2 PLY TYPE 10	1-15'		5290	1.0	0.72	0.89
48	8		100	8 PLY TYPE 26	2-28'		43260	1.0	1.02	1.23
101	8		100	10 PLY TYPE 26	2-28'		47130	1.0	0.10	1.37
94	6		140	8 PLY TYPE 26	1-32'	FIST RIBBON	36000	1.0	1.19	1.52
51	3		140	8 PLY TYPE 26	1-22'	RING SLOT	N.A.	N.A.	N.A.	N.A.
90	8		100	10 PLY TYPE 26	2-28'		33800	1.0	0.73	1.15
95	8		100	10 PLY TYPE 26	2-28'		38950	1.0	0.94	1.03
98	8		100	10 PLY TYPE 26	2-28'		41720	1.0	0.91	1.25
72	3		140	8 PLY TYPE 26	1-22'		15260	1.0	1.17	1.1
38	8		100	10 PLY TYPE 26	2-28'		42450	1.0	0.13	1.1
30	6		140	8 PLY TYPE 26	1-28'		26400	1.0	0.92	
90	8		100	10 PLY TYPE 26	2-28'		47670	1.0	1.02	
35	7		140	10 PLY TYPE 26	1-32'	FIST RIBBON	32750	1.0	0.85	

TABLE A-3 CONT.

SUMMARY of INDIVIDUAL CARGO DROPS -

AF 63-8077 C-14/A, 6

LIGHT NR	DATE	ER 5453 REF.	AF DROP NR	AIRPLANE DATA BEFORE DROP				CARGO DESCRIPTION				
				GW LBS	C.G. %MAC	SPEED KCAS	H, FEET	WEIGHT LBS	C.G. POS. FVS. STA.	AFT END FVS. STA.	LENGTH INCHES	HEIGHT INCHES
149	7-2-65	7.1.340-2	2264	227,000	33.5	149.5	5,080	34,650	1114	1196	288	90
				192,340	22.0	150	5,100	35,360	822	945	288	90
150	7-6-65	7.3.141-4	1804	195,800	33.5	139.5	4985	9,750	1147	1193	96	58
				186,050	29.5	144	5,000	10,130	1049	1094	96	85
				175,920	27.1	144	5,000	10,350	928	974	96	58
				165,570	27.2	144	5,000	9,950	819	864	96	85
151	7-12-65	7.3.142-7	2274	163,310	20.3	145.5	4995	9530	537	585	96	58
		42-6		173420	19.6	148	5000	10110	649	694	96	85
		42-5		183130	11.7	148	5000	9710	757	803	96	57
		42-4		193050	11.3	148	5020	9920	868	913	96	85
		42-3		203260	13.1	143	5030	10210	985	1033	96	58
		42-2		213750	17.4	141	5060	10490	1127	1172	96	85
		42-1		223900	23.3	141	5080	10150	1247	1285	96	58
178	9-8-65	7.3.143-4	2471	163045	26.6	150	5020	5055	698	694	96	58
		43-3		183610	21.1	151	5020	20565	799	928	232	65
		43-2		218635	28.7	152	5020	35025	1041	1175	288	92
		43-1		229100	33.7	151	5030	10465	1228	1266	96	71
175	9-2-65	7.3.140-2		190910	21.5	151	5020	35040	808	945	288	90
		402-1		220300	33.0	151	5020	35390	1111	1284	336	50
168	8-23-65	7.3.122-2	2436	193800	33.7	153.5	5030	35050	986	1126	288	100
170	8-25-65	7.3.122-2		173500	32.7	154.5	5025	19700	993	1135	288	100
172	8-27-65	7.3.122-2		179300	32.9	152.5	5030	19000	993	1135	283	101
173	8-31-65	7.3.122-2		179400	32.7	153.0	5015	19650	993	1135	283	10
183	9-14-65	7.3.130	2526	253900	20.1	171.5	5025	21050	779	925	268	46
184	9-20-65	7.3.131	2527	278398	26.7	190.5	5030	21330	774		288	
186	9-23-65	7.3.126	2824	269100	23.1	188.0	5060	24800	645		288	
188	9-30-65	7.3.128	2902	256200	25.9	198.5	5080	24700	784		283	
190	10-4-65	7.3.130	2902	252200	25.8	191.5	20035	24760	784		283	

ADS PROGRAM

6008

CARGO CHUTE DATA			EXTRACTION CHUTE DATA				EXTRACTIO			
IGHT CHES	NR.	DIA. TYPE	EXT. LINE LENGTH FEET	EXT. LINE TYPE	CHUTES DIAM.	TYPE CHUTE	PEAK FORCE LBS	AVE RATIO DESIRE	AVE RATIO MEAS'D	PEAK RATIO MEAS'D
90	8	100' G11A	100'	10 PLY TYPE 26	2-28'	RING SLOT	41,440	1.0	—	1.17
90	8	100' G11A	120'	10 PLY TYPE 26	2-28'	RING SLOT	—	1.0	—	—
55	3	100' G11A	100'	6 PLY TYPE T-10	1-22'	RING SLOT	12,310	1.0	1.10	1.26
85	3	100' G11A	100'	6 PLY TYPE T-10	1-22'	RING SLOT	13,670	1.0	1.11	1.35
58	3	100' G11A	120'	6 PLY TYPE T-10	1-22'	RING SLOT	N.A.	1.0	N.A.	N.A.
85	3	100' G11A	120'	6 PLY TYPE T-10	1-22'	RING SLOT	N.A.	1.0	N.A.	N.A.
58	3	100' G11A	120'	6 PLY TYPE T-10	1-22'	RING SLOT	N.A.	1.0	N.A.	N.A.
85	3		120							
57	3		120							
85	3		100							
58	3		100							
85	3		80				N.A.		N.A.	N.A.
58	3	100' G11A	80	6 PLY TYPE T-10	1-22'	RING SLOT	13240	1.0	1.06	1.3
58	2	100' G11A	20	2 PLY TYPE T-26	1-15'	RING SLOT	6696	1.0	1.07	1.32
65	5		100	8 PLY TYPE T-26	1-32'	RIBBON	30616		1.04	1.49
92	8		100	10 PLY TYPE T-26	2-32'	RIBBON	51000		1.10	1.46
72	3	100' G11A	80	6 PLY TYPE T-26	1-22'	RING SLOT	12510	1.0	1.06	1.20
90	8	100' G11A	100	10 PLY TYPE T-26	2-28	RING SLOT	39430	1.0	.38	1.12
50	8	100' G11A	80	10 PLY TYPE T-26	2-28	RING SLOT	39148	1.0	.87	1.11
100	8	100' G11A	100'	10 PLY TYPE T-26	2-28	RING SLOT	39550	1.0	.90	1.13
104	5	100' G11A	100'	6 PLY TYPE T-26	1-28	RING SLOT	24270	1.0	.89	1.24
101	5	100' G11A	100'	6 PLY TYPE T-26	1-28	RING SLOT	23018	1.0	.83	.21
101	5	100' G11A	100'	6 PLY TYPE T-26	1-28	RING SLOT	19450	1.0	.75	.99
44	5	100' G11A	100'	10 PLY TYPE T-26	1-24'	REINFORCED RING SLOT	N.A.	1.0	NA	NA
	6	100' G11A	100'	10 PLY TYPE T-26	1-24'	REINFORCED RING SLOT	18500	1.0	.74	.2
	6	100' G11A	100'	10 PLY TYPE T-26	1-24'	REINFORCED RING SLOT	26100	1.0	.90	1.08
	6	100' G11A	100'	10 PLY TYPE T-26	1-24'	REINFORCED RING SLOT	21850	1.0	.74	.20
	6	100' G11A	100'	10 PLY TYPE T-26	1-24'	REINFORCED RING SLOT	27500	1.0	.95	1.15

ON		DATA			AIRPLANE RESPONSE					PILOT RESPONSE	
PEAK PKG. VELOCITY FPS	RELEASE LOCK SETTING	RELEASE LOAD SETTING	RELEASE LOAD MEAS'D	FLAP POSITION %	TRIM & DEGREES	PEAK & DEGREES	PEAK C.G. VERTICAL ACCEL.	PEAK PLATFORM FORCE, LBS		STICK FREE	
N.A.	1.70N1	3000	N.A.	67	0.5	1.0	1.16	5180		STICK FREE	NO LOSS IN AIR
46.3	1.90N2	5000	6700	67	1.8	3.2	1.32	7600	5.5°/sec	12°/SEC.	SLIGHT TRIM C
51.2	2.80N6	20000	MANUAL RELEASE	67	1.0	2.3	1.26	4220	1°/sec	INPUT	MANUAL RELEASE
43.8	1.450N2	3500	2600	67	1.0	2.3	1.33	5695	2°/sec	INPUT	PLATFORM NC
64.0	0.750N1	1250	1500	67	0	0.8	1.04	1230	STICK FREE		
59.5	1.90N3	7000	6000	UP	5.5	6.1	1.37	7935			ZERO FLAPS AN
59.6	2.00N4	9500	8000	67	1.8	4.5	1.40	10950			VERY GRADUAL
51.3	2.00N4	9500	12500	67	1.0	3.2	1.46	10500			VERY GRADUAL
41.7	2.00N4	9500	12000	67	1.5	3.5	1.49	12000			
34.7	1.90N2	5000	6500	67	1.5	6.7	1.61	16040	8°/sec	10°/SEC	CONSIDERABLY MO
51.2	2.30N4	11000	12500	33	4.2	6.1	1.55	9140	STICK FREE		MILD PITCH UP
43.8	2.10N5	12000	24500	67	0	3.8	1.54	N.A	2°/sec	INPUT	EMERGENCY R
43.2	2.350N5	13500	21000	65	0.5	3.3	1.70	16560	STICK FREE		DECELERATION AN
37.0	1.950N4	9000	13500	67	0.5	4.0	1.75	21100	STICK FREE		REPEAT DROP DUE
30.8	1.550N4	7000	8030	67	1.0	5.0	1.88	25700	2°/sec	INPUT	PLATFORM BOTTOM TRANSFER POSITIC
52.0	2.150N5	14500	18500	67	3.0	4.5	1.49	15200	STICK FREE		VERY MILD PITC
41.3	2.30N6	16000	20000	67	2.5	4.2	1.56	18300	STICK FREE		L.H. RAIL UNLOCK UNLOCK, 5 LBS
41.3	2.30N7	17500	25600	65	0	1.5	1.62	28200	7°/sec	12°/SEC	ATTEMPTED FIX PEAK N&T AT C
41.0	2.20N4	10500	15360	67	0	0.8	1.29	12685	STICK FREE		EXTRACTION LIN PITCH UP NOTI
66.7	1.70N1	3000	3450	55	1.5	3.1	1.25	4175	1°/sec	INPUT	EXTRACTION L SLIGHT AIRCR
56.1	2.20N4	10500	11550	67	0.5	2.0	1.49	1760	13°/sec	6°/SEC.	EXTRACTION CH AFTER PACKAG
58.0	2.10N5	12000	12080	90	2.2	5.6	1.85	18480	13°/sec	19°/SEC.	ONE EXT. CHUT NORMAL GRE
39.2	2.30N7	17500	23600	63	0.5	4.5	1.93	26400	STICK FREE		MODERATE P
45.5	2.10N5	12000	16800	63	0.1	2.0	1.58	13900	STICK FREE		NO NOTICEABLE
48.1	1.950N1	3000	3570	65	1.8 ND	1.0 ND	1.20	4150	STICK FREE		NO NOTICEABLE
55.7	2.30N7	17500	23200	63	0	3.3	1.87	18000	STICK FREE		SLIGHT PITCH-
10.0	2.30N7	17500	34100	67	0.5 ND	5	1.80	50700	RAPID FALL 8°		ARAAV MOCK-UP
66.1	2.40N4	12,000	13980	60	0.5 NU	3.2	1.70	13780	STICK FREE		
33.0	2.00N3	?	N.A.	63	0.5	2.0	1.66	30190	8° = 14°		8° APPLIED 1
49.1	2.050N6	17,500	12340	10	2.5	6.0	1.79	21900	STICK FREE		NO EXTRACTION AT 10°
2.0	2.050N6	17500	19210	63	4.0	6.1	1.53	32560	8° = 4°		EXTRACTION 10° 1/2 ADV. STEN
51.1	2.050N6	17,500	18110	65	0.0	1.0	1.48	19930	STICK FREE		AFTER DRO
47.0	2.60N1	5000	4250	55	2.5 ND	1.5 ND	1.24	4040	8° = 1.0		EXT. PROKE
12.1	2.050N6	17500	23210	65	1.25	2.0	1.35	22950	8° = 3.0		SECOND EX
73.2	2.350N3	11500	11240	65	2.0 ND	1.5 NU	1.57	14860			
12	2.40N5	17500	12750	6	1.7	2.3	1.41	22870	8° = 2.5		SECOND EX
71.0	1.90N6	15000	13550	6	1.2 ND	2.0	1.71	21850			BETWEEN 10



ER 5475
C-141A
A-4

COMMENTS

(INCLUDES LOADS \geq 90% LIMIT)

AIR SPEED									
1 CHANGE TO NOSE UP									
RELEASE OF LH LOCKS AFTER FULL INFLATION OF CHUTE.									
NOT RECOVERED									
AND +4° DECK ANGLE									
JAL, MILD PITCH UP									
JAL PITCH UP									
MORE PITCH UP NOTICED AT LOWER EXTRACTION RATE. RH LOCK RELEASED DURING T.O.									
UP. GROUND RELEASE ACTIVATED PREMATURELY									
RELEASE TEST. RELEASE FORCE LESS THAN 10 LBS									
AND MILD PITCH UP OF AIRCRAFT NOTICED BY PILOT									
DUE TO OSCILLOGRAPH FAILURE. MILD PITCH NOTICED BY PILOT.									
TOM SEVERELY CUT BY INSIDE ROLLERS. FORCE TRANSFER TO SIMULATE ARMY FORCE									
ITION. LOAD TUMBLED 180°. CONSIDERABLE PITCH UP NOTICED. LH PETAL DOOR ACT. LOAD									
PITCH UP									
LOCKED AT 3 MINUTES OUT AND RELOCK AT 1 MINUTE OUT. 20 LBS. REQ'D TO									
BS TO RELOCK. VERY MILD PITCH UP.									
FIXED ATTITUDE TECHNIQUE. APPEARS TO BE SATISFACTORY FOR REDUCING									
T C.G. L&R SPIDERS ARM LOADS = 12500 LBS. T									
LINE 60' + 60' + 20' LENGTHS + ALL LINKS OUTSIDE AIRCRAFT. VERY MILD									
OTICED. RAMP DOES NOT GO DOWN ALL THE WAY.									
N LINE (100' + 40' LENGTHS) HIT CEILING. ALL LINKS OUTSIDE AIRCRAFT.									
RCRAFT ATTITUDE CHANGE NOTICED.									
CHUTE RELEASE MANUALLY REQUIRING 20 LBS. FORCE. MILD PITCH NOTICEABLE									
WAGE CLEARS AIRCRAFT.									
CHUTE FAILED AFTER FULL INFLATION. LOAD DELIVERY SATISFACTORY AND									
REATEST PITCH UP NOTICED. HIGH ELEV. BREAKOUT FORCE CAUSES TOO RAPID INPUT.									
PITCH UP NOTICED BY PILOT. L. SPIDER ARM LOAD = 12000 LBS., R. SPIDER ARM LOAD = 11,000 LB.									
PITCH UP NOTICED BY PILOT. L&R PEDAL DOOR ACT. LOADS = 9850 LBS. C									
BLE PITCH-UP UNTIL PACKAGE LEFT RAMP.									
LE PITCH-UP UNTIL PACKAGE LEFT RAMP. EXTRACTION LINE LINK INSIDE AIRPLANE WITH CHUTE									
CH-UP WHILE PACKAGE WAS INSIDE AIRPLANE. 9° PITCH-UP AFTER PACKAGE LEFT RAMP.									
K-UP ~ ACCIDENTAL RELEASE OF EXTRACT LINE APPROX. 0.2 SEC AFTER LOCK RELEASE.									
D 1.5 SEC									
ATION FOR LOW RELEASE LOAD - ON T.O. LATCH INDICATORS MOVED									
RETURNED TO 2.05									
ION FORCE MEASURED FOR 1.4 SEC - EXCEEDED PETAL DOOR LOADS									
ENT GRAVITY D. LOAD ON PACKAGE 0.51 SEC - EXTR LINK BREAK 1.25 SEC - EXT - ONE REMA									
ROP NOTED DENT IN TAIL CONE AS IF EXTRACTION LINE OR RISE IN									
KE BEARING ON ST. RAIL - 4 SEC BETWEEN EXTRACTIONS									
EXT. CHUTE RODE LOW.									
EXT. CHUTE RODE LOW - PILOT APPLIED NOSE UP ELEVATOR									
LOADS									

FIGURE A-3a

DATA				AIRPLANE RESPONSE					PILOT RESPONSE		
PEAK PA. VELOCITY FPS	RELEASE LOCK SETTING	RELEASE LOAD SETTING	RELEASE LOAD MEAS'D	FLAP POSITION %	TRIM ° DEGREES	PEAK ° DEGREES	PEAK C.A. VERTICAL ACCEL.	PEAK PLATFORM FORCE, LB			
17.8	2.4 ON 5	17,500	21,140	65	1.5 NU	4.4 NU	1.53	44,300	FULL DN 12°/SEC	INADVERTENT	GRAVIT
—	2.5 ON 6	17,500	—	65	—	—	—	—	—	INTENTIONAL	CUTAWAY
										DAMAGED	SOME BL
40.0	2.6 ON 1	5,000	8,610	63	1.3 NU	1.5 NU	1.17	5,430	2° Se MAX		
61.0	2.6 ON 1	5,000	6,540	63	1.2	1.5	1.20	7,750			
50.0	5 ON 2	5,000	N.A.	63	1.0	1.2	1.20	3,480			
78.5	1.5 ON 2	5,000	N.A.	63	0.2	1.0	1.24	4,650			
66.7	1.5 ON 2	5000	NA	63	0	0	1.10	9500	7° Se DN	WORLD RECORD	
61.5	2.6 ON 1				-.5 ON D	0	1.25	9800	6° Se DN		
57.1	1.5 ON 2				0	0	1.13	9300	5° Se DN		
53.3					.75 NU	1.0 NU	1.14	9200	2.5° Se up		
47.1					2.0 NU	1.0 NU	1.10	9200	3.0° Se up		
40.0			NA		1.5 NU	2.0 NU	1.15	9400	3.5° Se up		
30.8	1.5 ON 2	5000	5760	63	2.0 NU	—	1.04	9400	0° Se		
61.5	1.3 ON 1	2500	3453	60	.5 NU	1.0 ND	1.17	4300	5° Se (MAX)	NO RAMP SIDE CURT	
64.0	2.15 ON 3	10000	10474		.5 ND	1.0 ND	1.43	19000			
52.7	2.05 ON 6	17500	26077		1.5 NU	2.0 NU	1.44	31500			
21.7	1.5 ON 2	5000	9206	60	2.0 NU	0	1.07	10600			
26.4	2.05 ON 6	17500	23935	60	0 NU	5.0 NU	2.12	50800	FULL DOWN ELEV (12°/SEC)	SECOND EXTRACTION	
39.4	2.05 ON 6	17500	23649	60	2.0 NU	2.0 NU	1.31	29500	5° Se	DECREASED TO 0	
47.0	2.05 ON 6	17500	25770	60	0	1.8 NU	1.55	24300	STICK FREE	POSITIVE ROLLER IND	
45.0	2.15 ON 3	10000	11630	60	1.0 ND	0	1.35	17600	STICK FREE	NO RAMP SIDE CURT	
47.0	2.15 ON 3	10000	10550	60	1.0 ND	0	1.43	22600	STICK FREE	FLOOR COLLER CAM	
45.0	2.15 ON 3	10000	9174	60	.5 ND	.5 NU	1.35	18500	STICK FREE	RAMP SIDE CURTAIN	
54.5	2.15 ON 3	10000	NA	55	1.0 NU	4.0 NU	1.52	21050	1° Se	RAMP SIDE CURTAIN	
49.1	2.15 ON 3	10,000	11500	55	.7 NU	4.0 NU	1.57	21050	STICK FREE	4° ELEV AFTER DFC	
56.0	2.05 ON 6	12,000	12150	75	3.0 ND	0° NU	1.72	24890	0.8° Se		
48.0	2.05 ON 4	12,000	15700	35	1.0 NU	2.8° NU	1.65	24800	1.0° Se	7° ELEV INPUT AFTER	
55.5	2.05 ON 4	12,000	15700	38	.5° NU	2.0° NU	1.62	24800	1.0° Se	7° ELEV INPUT AFTER	

ER 5473

C-141A

A-5

COMMENTS

AVITY DROP CAUSED BY FAILURE OF EXTRACTION LINE AT AN EXTRACTION FORCE OF 41,440 POUNDS.
 ITAWAY OF 2ND PKG. EXTRACTION CHUTE AND 2ND PKG. NOT DROPPED. FIRST PKG.
 E ROLLERS @ RAMP LIP. 1ST PKG. DESTROYED ON IMPACT AFTER FREE FALL.

D DROP OF 70195 LBS TOTAL - VERY SMOOTH - NO PROBLEM

CURTAINS

EXTRACTION CHUTE FAILED AFTER REACHING PEAK FORCE - EXTRACTION FORCE THEN
 DROPPED 0.1g AND REMAINED STEADY, DITCH RATE 90/SEC - NO DAMAGE SUSTAINED

INDENTATION FOR ENTIRE PLATFORM - MID PANELS WORSE WITH 3/32 INCH DEEP INDENTATION
 CURTAINS - 60 DEG. DOOR POSITION
 CURTAINS - 60 DEG. DOOR POSITION - POSITIVE ROLLER INDENTATION - CENTER PANELS WORSE
 DAMAGE EVIDENT ON MANY ROLLERS

CURTAINS ON - 55 DEG DOOR POSITION

CURTAINS ON - 60 DEG DOOR POSITION

CURTAINS OFF - 60 DEG DOOR POSITION

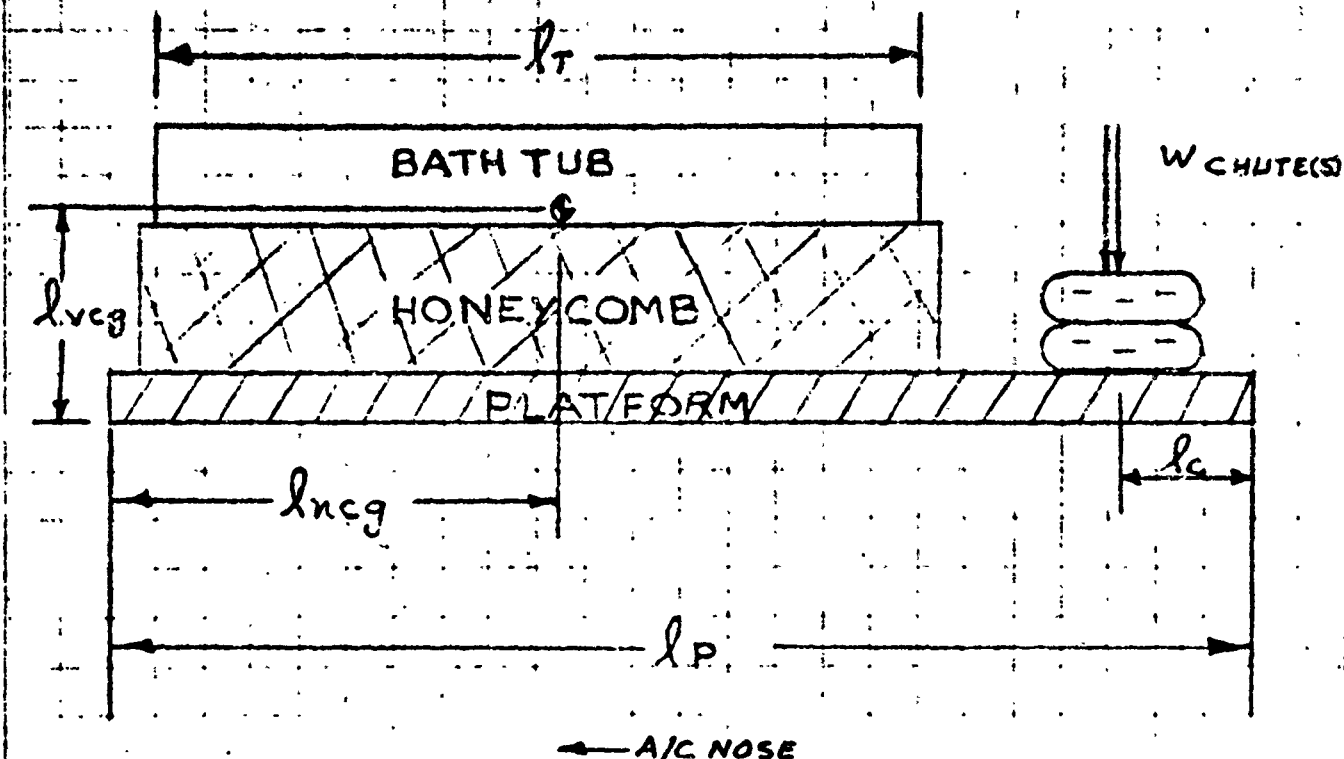
DROP - NO PROBLEMS - NO DAMAGE

AFTER DROP - NO PROBLEMS

AFTER DROP - NO PROBLEMS

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	FORM
Checked			TITLE TABLE - A4	Model	C-141A	
Approved				Report No.	EE 547	

ADS CARGO DESCRIPTION



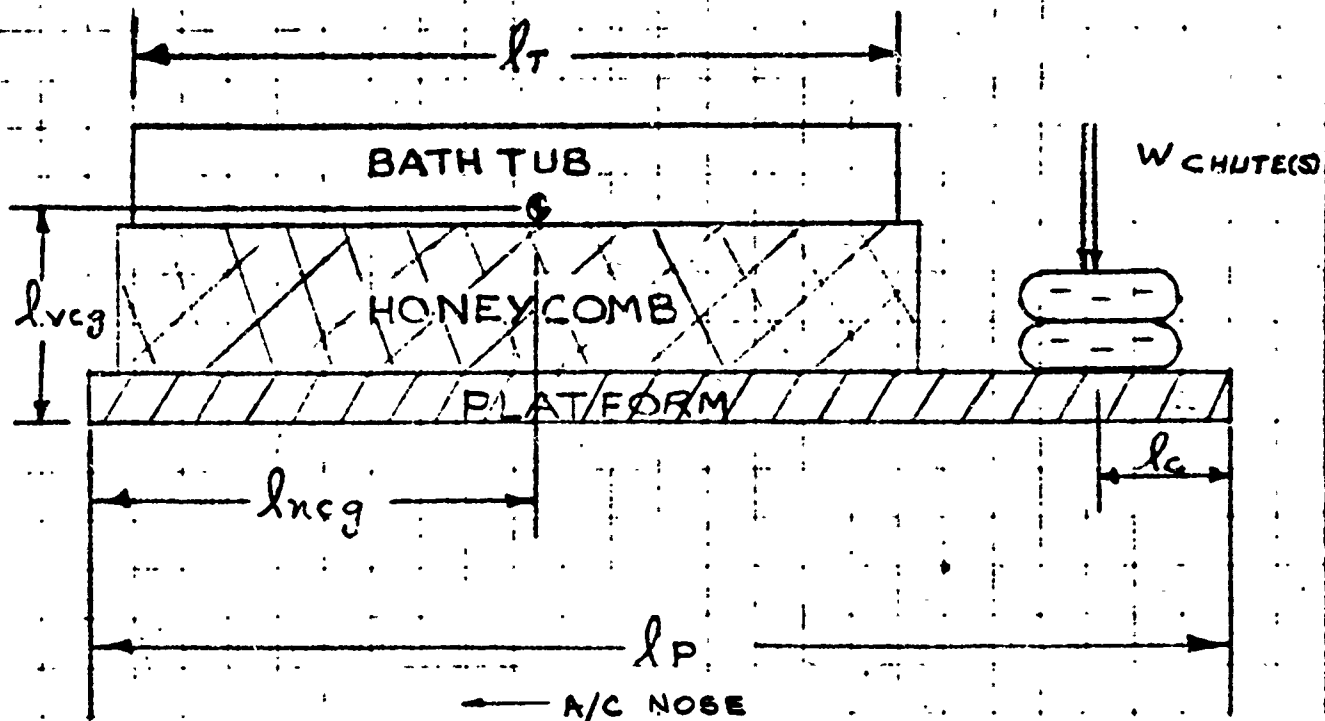
DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S. W.L.	
1	98	2640	96	84	50	22.5	50	1	908	168.5
2	93	5840	96	96	48	37	34	2	864	180
3	94	10650	144	132	74	30	70	3	832	176
4	95	10300	240	132	120	30	120	3	851	176
5	96	10450	144	132	72	30	75	3	824	176
6	99	13200	144	132	73	30	56	4	812	176
7	100	18300	240	222	129.5	30	72	5	835	177.5
8	101	18820	192	222	98	31.5	48	5	847	177.5
9	102	18330	192	222	99	31.5	24	5	847	177.5
10	103	18400	192	222	99	31.5	24	5	847	177.5
11	108	21900	192	222	103	27.5	24	6	858	173.5
12	111	23830	240	222	125	27.0	48	6	866	173
13	112	27190	240	222	125	33	42	7	876	179
14	113	27450	240	222	126	33	40	7	878	179
14R	117	27450	240	222	126	33	40	7	878	179
15	118	27930	240	222	125	33	40	7	876	179
16	119	29250	288	222	121.9	34	40	7	879	180
17	120	32030	288	222	120.5	35	40	8	877	181

LA FORM 502 2

FIGURE A-4a

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM
Checked			TITLE	Model		
Approved			TABLE - A 4	Report No.	EE 5473	

ADS CARGO DESCRIPTION



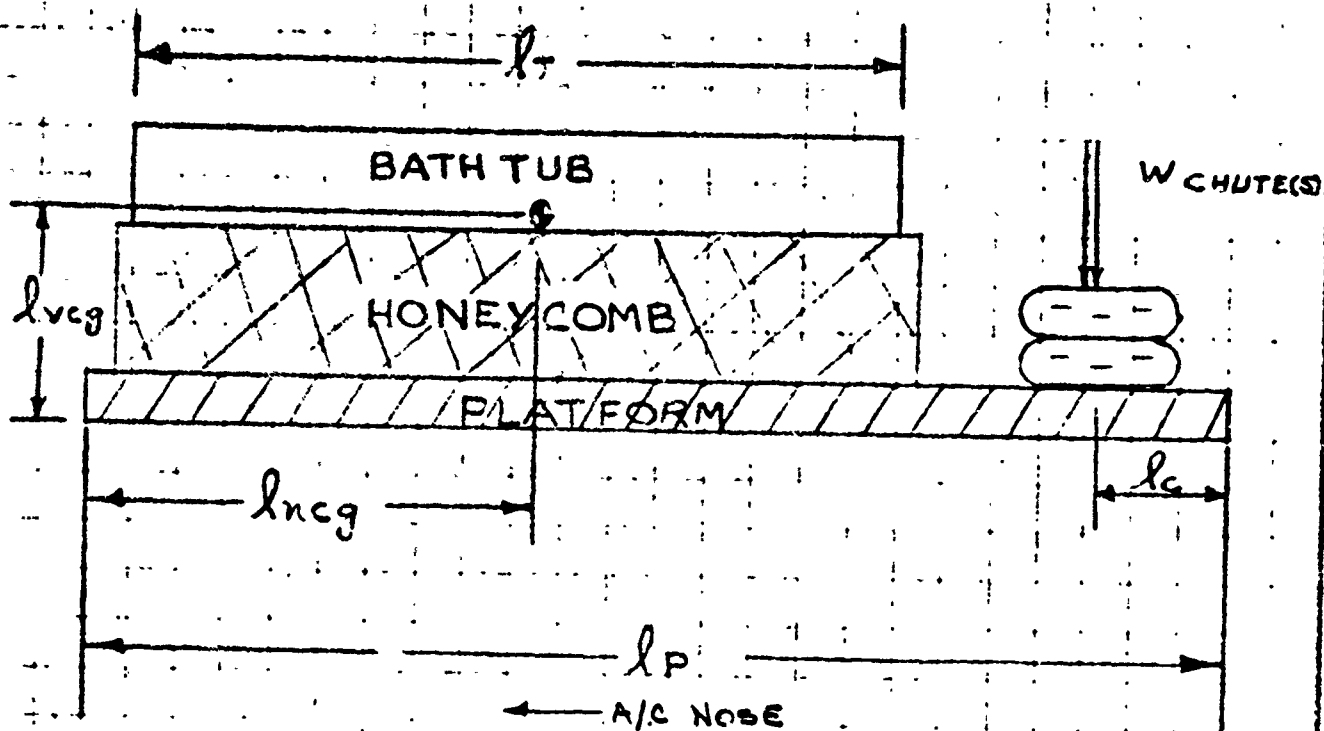
DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S. W.L.
18	121	35540	288	222	122	35	40	8	889 181
19	130	35710	288	222	120.5	35.5	40	8	987 184.5
20	142	34960	288	222	125	38.5	40	8	881 184.5
21	123	21350	192	222	103.5	27.5	24	6	1018 173.5
22	139	34400	288	222	130	35	24	8	987 181
22R	168	35050	288	222	148	39	28	8	986 185
22R-2	170	19700	288	222	146	34	96	5	993 180
22R-3	172	19900	288	222	146	34	96	5	993 180
22R-4	173	19650	288	222	146	34	96	5	993 180
23	127	6060	96	96	50	41.5	36	2	537 187.5
24	128	21550	192	222	104	43	22	6	699 189
25	138	35250	288	222	123.5	35.5	34	8	780 181.5
26	129	23440	240	222	125.5	41.5	48	6	717 187.5
27	141	23750	240	222	126	38.5	44	6	717 184.5
28	188	24700	288	222	127	35.5	35	6	784 181.5
29	143	35700	288	222	153.5	28.5	68	8	781 174.5
30	183	21050	288	132	142	28	42	5	779 174
31	184	21330	288	222	127.5	35	32	5	774 181

FIGURE A-4b

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM.
Checked				Model	G-141A	
Approved				Report No.	ER 5473	

TABLE - A 4

ADS CARGO DESCRIPTION

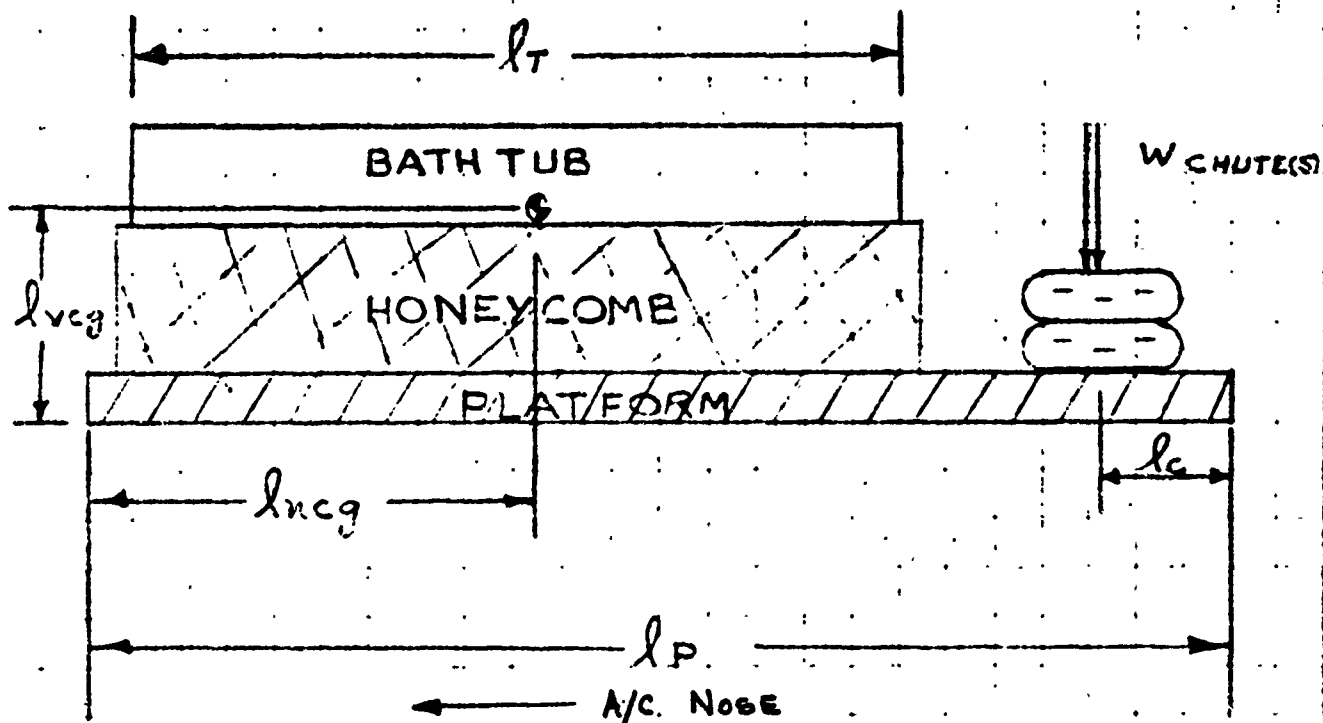


DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S. W.L.
32	144	35335	288	222	153	28.5	70	8	1090 174.5
33	190	24760	288	222	126.5	35.5	35	6	784 181.5
34	136	24830	240	222	123	27	60	6	884 173
35	137	5940	192	132	96.5	27.5	96	2	592 173.5
36	186	24840	288	222	127.5	34.5	40	6	645 180.5
37-1	145	34800	288	222	155.5	36.5	64	8	1022 182.5
37-2	145	9450	96	96	49	29.5	24	3	813 175.5
38-1	146	34900	288	222	148	33	69	8	1074 179
38-2	146	22450	192	222	100	33	18	6	816 179
39-1	148	35030	288	222	152	33	68	8	1099 179
39-2	148	29600	240	222	125.5	29.5	48	7	815 175.5
40-1	149	35360	288	222	146	33	62	8	1114 179
40-2	149	34650	288	222	155	33	60	8	822 179
40R-1	175	35390	236	222	163	33.5	52	8	1111 179.5
40R-2	175	35040	288	222	151	36	68	8	808 182
41-1	150	9750	96	96	50	19	28	3	1147 165
41-2	150	10130	96	132	51	42.5	48	3	1049 188.5
41-3	150	10350	96	96	50	19	28	3	928 165

FIGURE A-40

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	TEMP.	FORM
Checked			TITLE	Page	A-9
Approved			TABLE - A4	Model	G-141A
				Report No.	ER 5473

ADS CARGO DESCRIPTION



DROP NO.	FLT. NO.	TOTAL DROP WT. LBS.	l_P IN.	l_T IN.	l_{ncg} IN.	l_{vcg} IN.	l_c IN.	NO. OF CHUTES	CARGO C.G. POS. F.S. W.L.
41-4	150	9950	96	132	51	42.5	29	3	819 188.5
42-1	151	10150		132	58	17.5	0	3	1247 163.5
42-2		10490		132	51	42.5	12	3	1127 188.5
42-3		10210		108	47.5	18	31	3	985 164
42-4		9920		132	51	42.5	12	3	868 188.5
42-5		9710		96	50	18	26	3	757 164
42-6		10110		132	51.5	44	8	3	649 190
42-7		9530		96	48	18	48	3	537 164
43-1	178	10465		96	48	32	29	3	1228 178
43-2		35025	288	222	154.5	36	68	8	1041 182
43-3		20565	192	132	103.5	24	60	5	799 170
43-4		5055	96	96	50	30	28	2	648 176

FIGURE A-4d

TABLE A-5
C-141A CARGO RIGHT HAND RESTRAINT RAIL SETTINGS

PLATFORM WEIGHT	1 LOCK	2 LOCKS	3 LOCKS	4 LOCKS	5 LOCKS	6 LOCKS	7 LOCKS
2,500	.50						
3,000	.60						
4,000	.90	.65	.55				
5,000	1.10	.75	.65				
6,000	1.35	.85	.70	.60			
7,000	1.60	.95 ////	.80	.70	.60		
8,000	1.85	1.10	.90	.75	.70	.60	
9,000	2.10	1.20	.95	.80	.75	.65	
10,000	2.35	1.30	1.05	.90	.80	.70	.65
11,000	2.60 ////	1.45	1.15 ////	.95	.85	.75	.70
12,000	2.85	1.55	1.20	1.00	.90	.80	.75
13,000	3.10	1.65	1.30	1.10	.95	.85	.80
14,000		1.75	1.40	1.15	1.00	.90	.85
15,000		1.90	1.50	1.20	1.05	.95	.90
16,000		2.00	1.55	1.30	1.10	1.00	.95
17,000		2.10	1.65	1.35 ////	1.15	1.05	.95
18,000		2.25	1.70	1.40	1.20	1.10	1.00
19,000		2.35	1.80	1.50	1.25	1.15	1.05
20,000		2.45	1.90	1.55	1.30 ////	1.20	1.10
21,000		2.60	2.00	1.60	1.40	1.25	1.15
22,000		2.70 ////	2.05	1.70	1.45	1.30	1.20
23,000		2.80	2.15	1.75	1.50	1.35 ////	1.25
24,000		2.95	2.25	1.80	1.55	1.40	1.25

TABLE A-5
C-141A CARGO RIGHT HAND RESTRAINT RAIL SETTINGS

PLATFORM WEIGHT	1 LOCK	2 LOCKS	3 LOCKS	4 LOCKS	5 LOCKS	6 LOCKS	7 LOCKS
25,000		3.05	2.30	1.90	1.60	1.45	1.30
26,000			2.40	1.95	1.65	1.45	1.35
27,000			2.50	2.00	1.70	1.50	1.40
28,000			2.60 TTTTTT	2.05	1.75	1.55	1.45
29,000			2.65	2.15	1.80	1.60	1.50
30,000			2.75	2.20	1.85	1.65	1.50
31,000			2.80	2.25	1.90	1.70	1.55
32,000			2.90	2.35	2.00	1.75	1.60
33,000			3.00	2.40	2.05	1.80	1.65
34,000			3.05	2.45	2.10	1.85	1.70
35,000				2.55	2.20	1.90	1.75

FOR BEST PERFORMANCE USE VALUES IN THE SHADED PORTION OF THE TABLE; VALUES OUTSIDE OF THE SHADED PORTION MAY BE USED WHEN NECESSARY.

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **B-1**

APPENDIX B

PREPARED BY Pemberton
DATE 8-11-65
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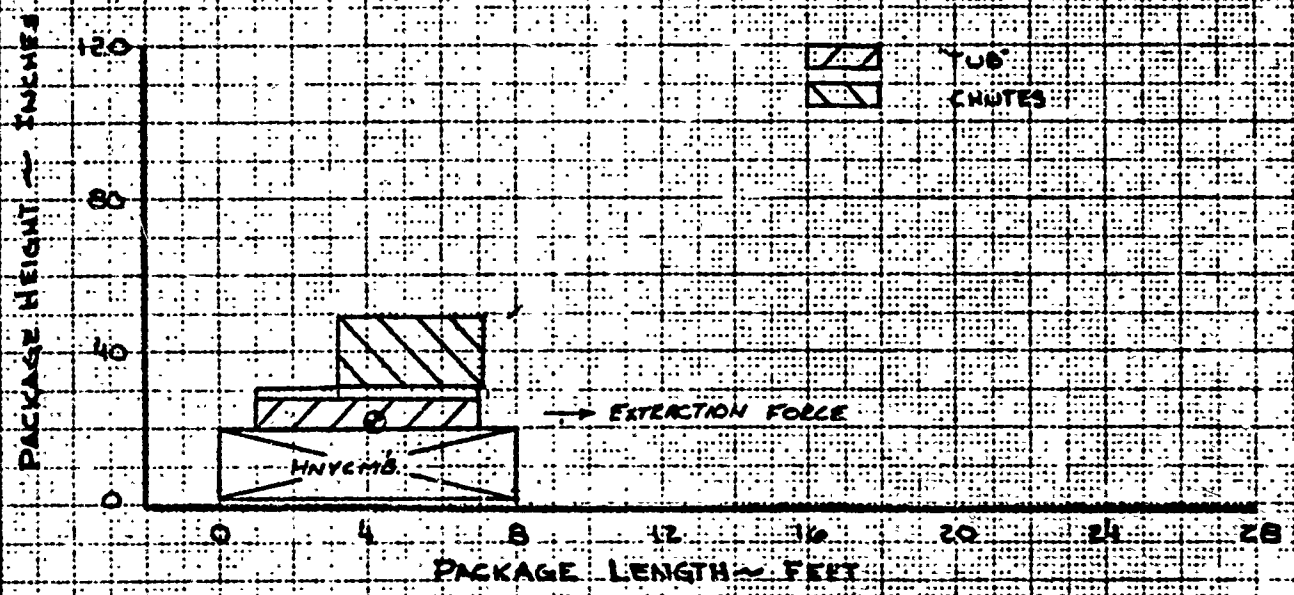
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-2

AERIAL DELIVERY PACKAGE DATA

FLIGHT 98
DROP 1
PKG. WT. 2,640 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C →

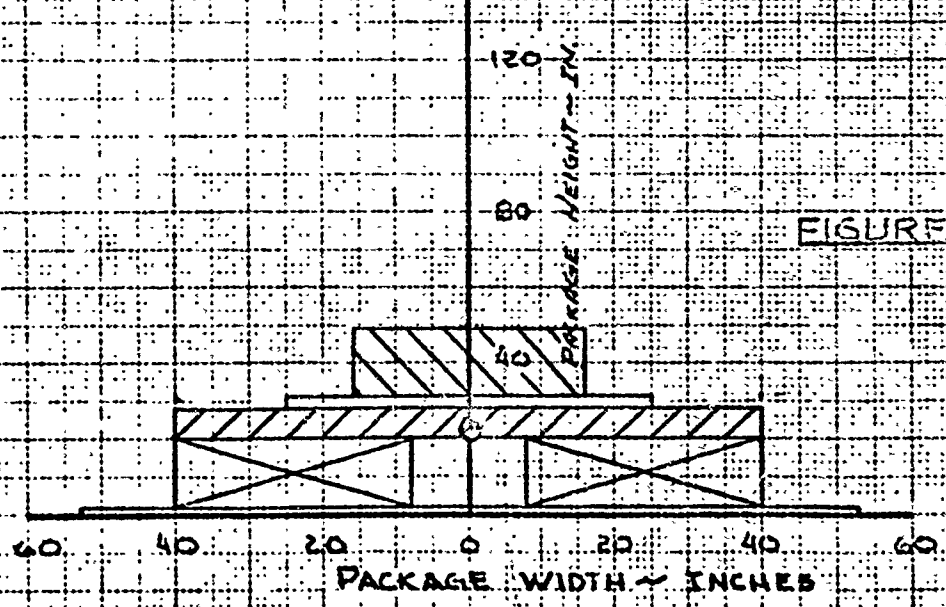


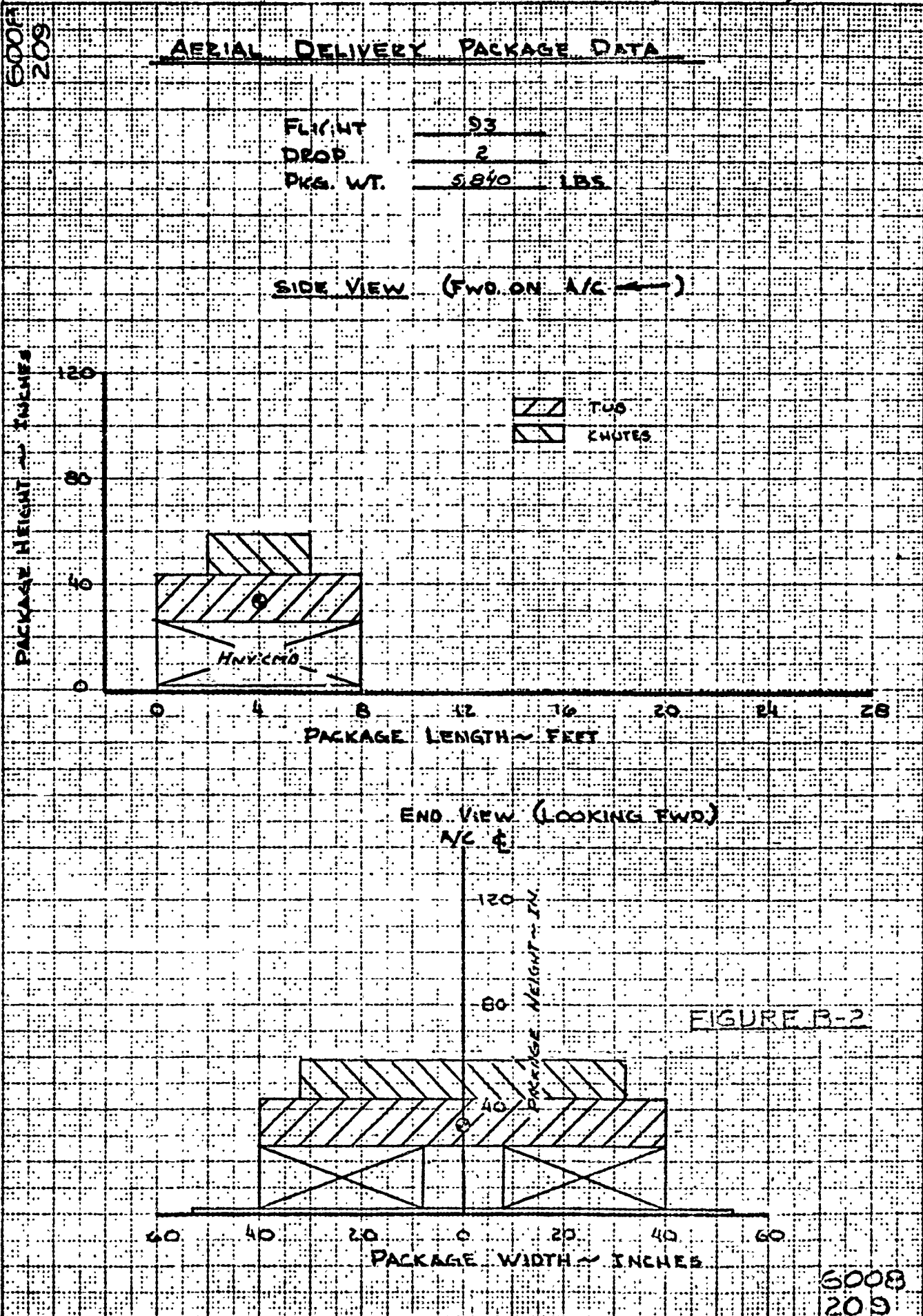
FIGURE B-1

6008
208

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A(6008)
PAGE B-3



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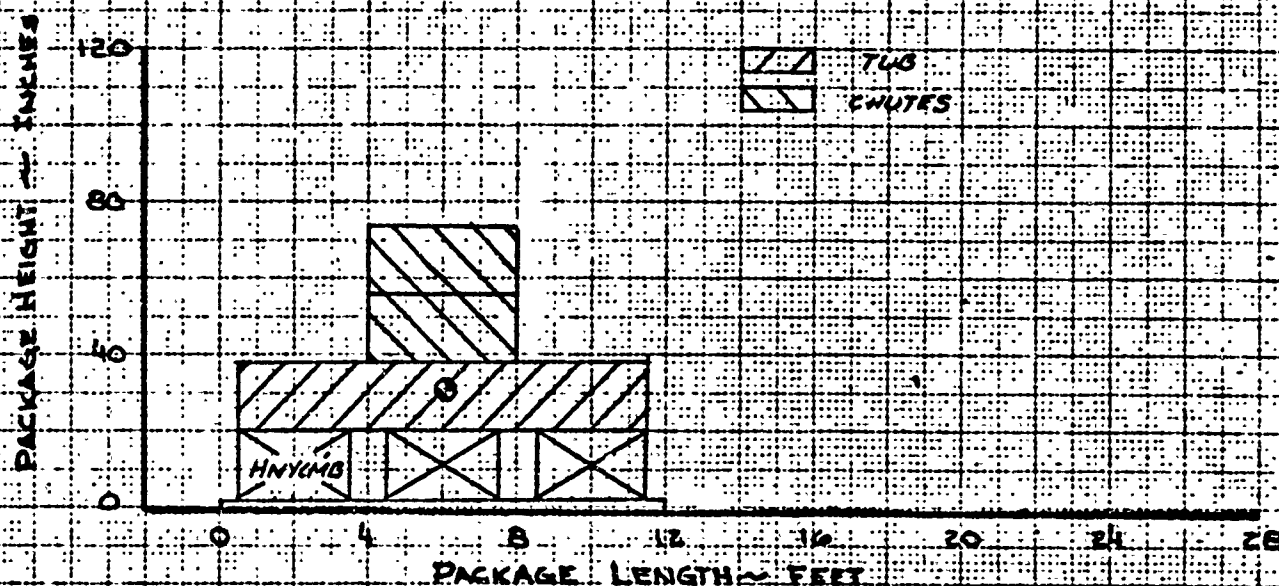
LOCKHEED-GEORGIA COMPANY
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REPORT NO. ER 5473
 MODEL C-141A(6008)
 PAGE B-4

AERIAL DELIVERY PACKAGE DATA

FLIGHT 94
 DROP 3
 PKG. WT. 10,650 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
 A/C →

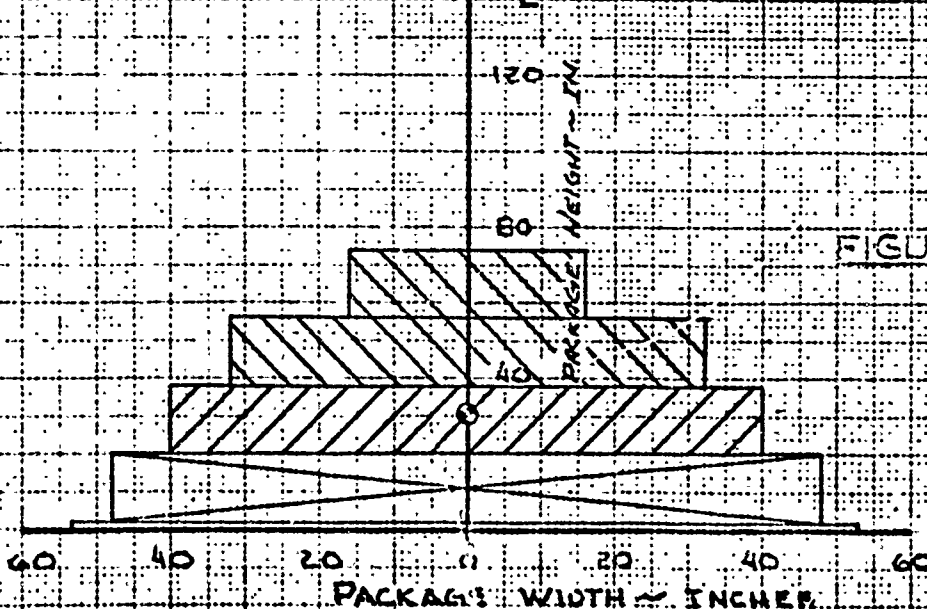


FIGURE B-3

6008
 210

PREPARED BY Pemberton
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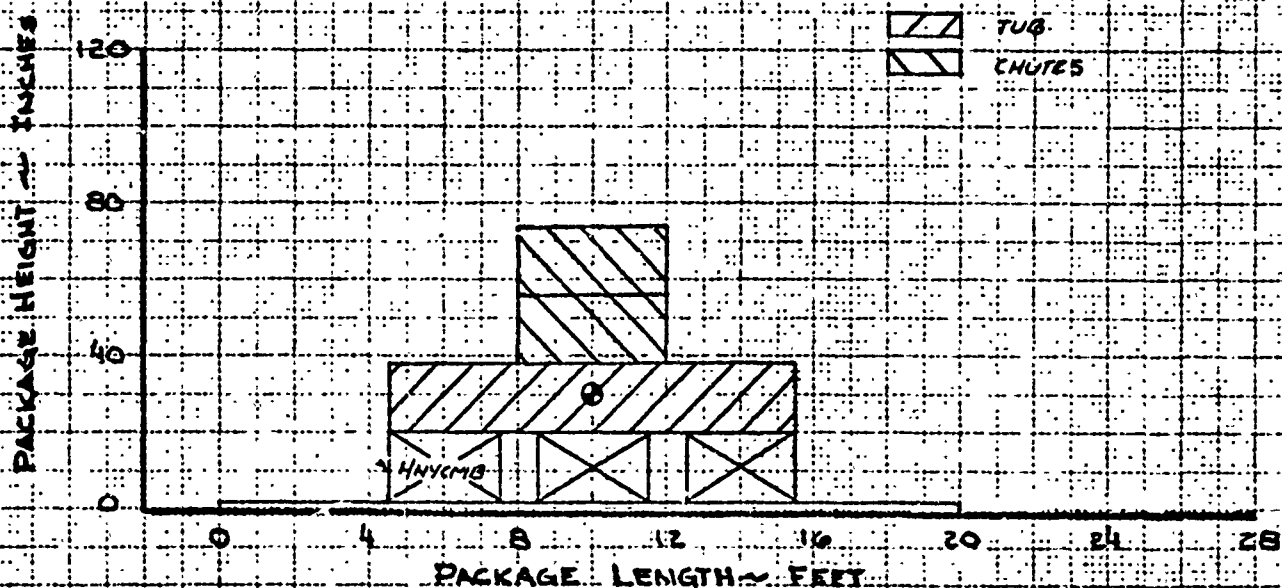
LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-119A (6008)
 PAGE B-5

AERIAL DELIVERY PACKAGE DATA

FLIGHT 95
 DROP 4
 PKG. WT. 10,300 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C

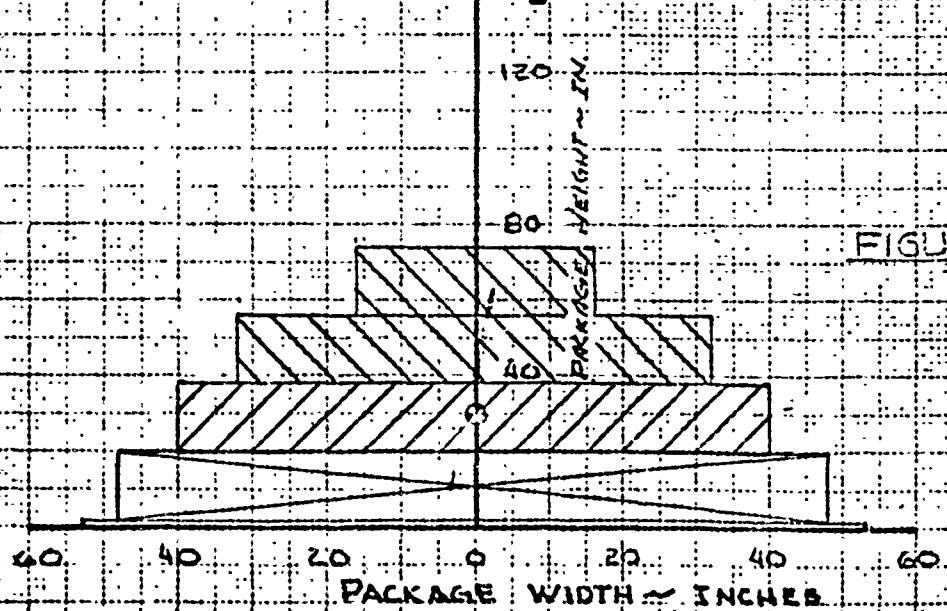


FIGURE 3-4

6008
 211

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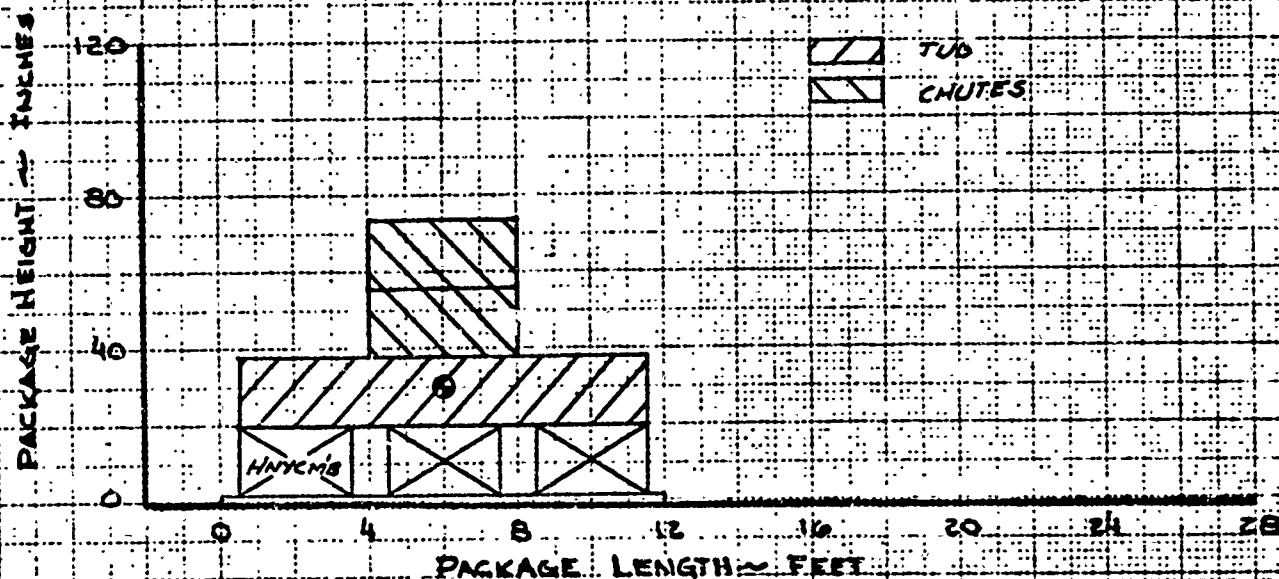
LOCKHEED GEORGIA COMPANY
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REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-6

AERIAL DELIVERY PACKAGE DATA

FLIGHT 96
DROP 5
PKG. WT. 10,450 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD.)
A/C \uparrow

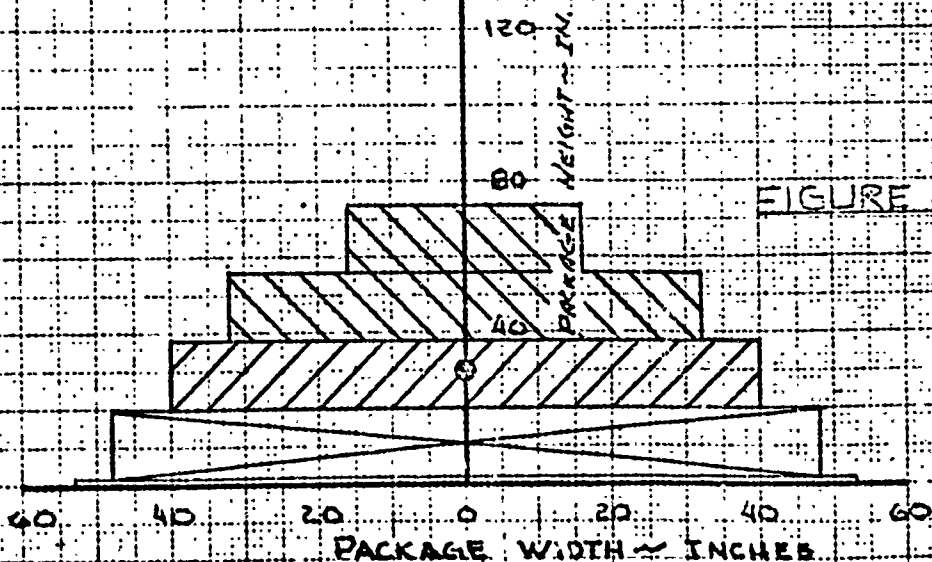


FIGURE B-5

6008
212

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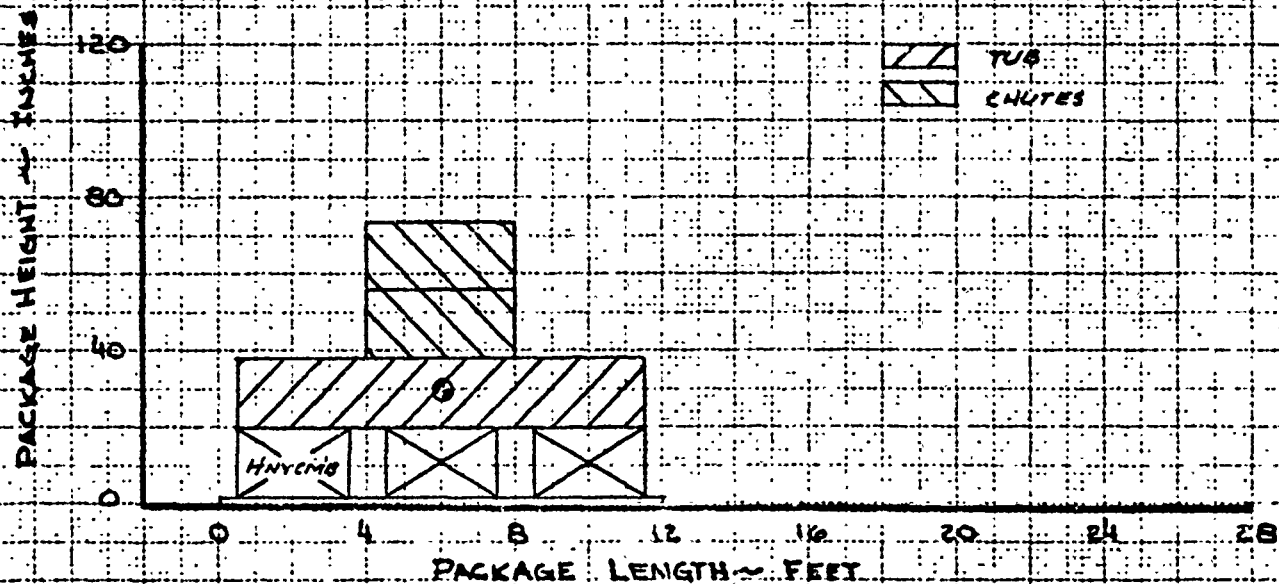
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-7

6008
213

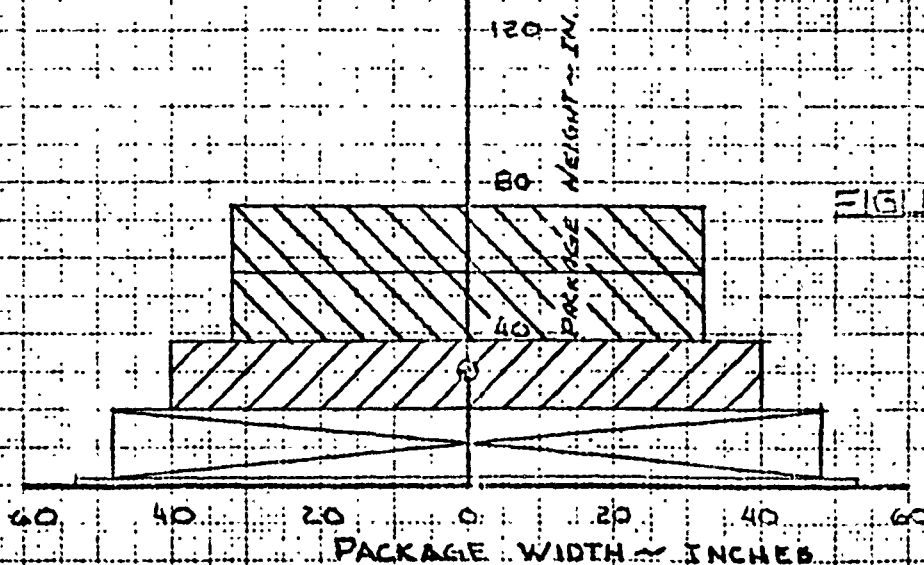
AERIAL DELIVERY PACKAGE DATA

FLIGHT 99
DROP 6
PKG. WT. 13,200 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →



6008
213

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LOCKHEED-GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT CORPORATION

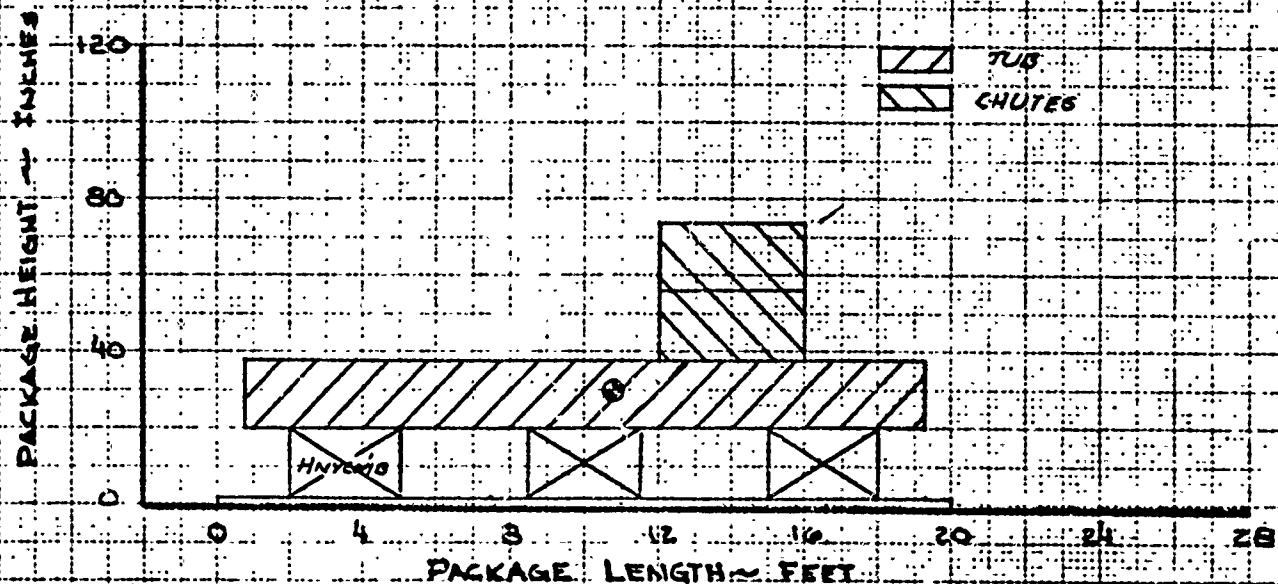
REPORT NO. EE 5473
MODEL C-141A (6008)
PAGE B-8

6008
214

AERIAL DELIVERY PACKAGE DATA

FLIGHT 100
DROP 7
PKG. WT. 18,300 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

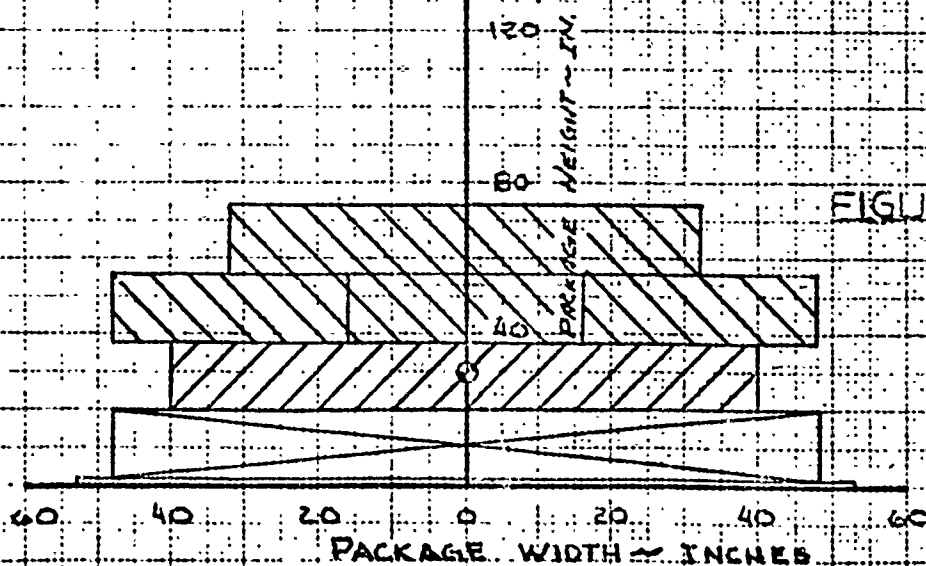


FIGURE B-7

6008
214

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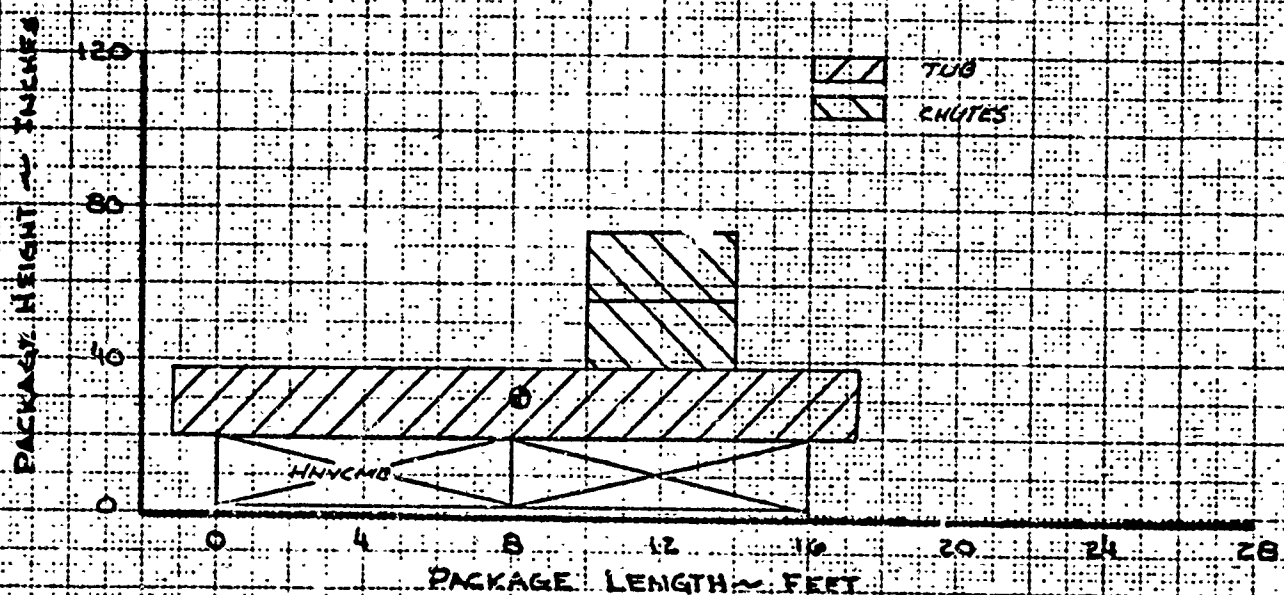
LOCKHEED CORPORA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-9

AERIAL DELIVERY PACKAGE DATA

FLIGHT 101
DROP 8
PKG. WT. 18,820 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C ⊥

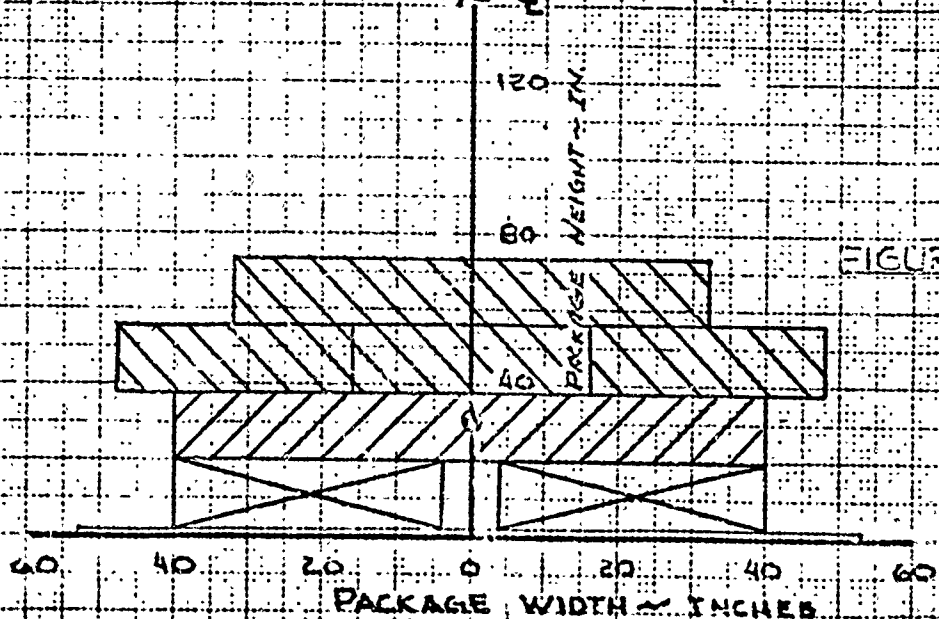


FIGURE B-8

6008
215

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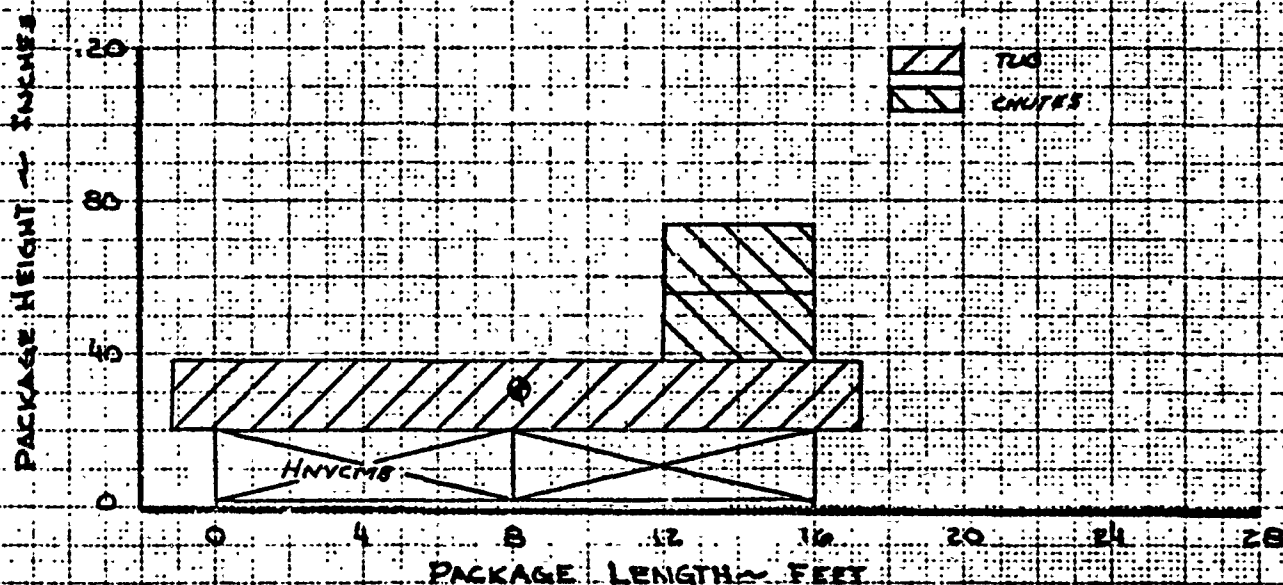
LOCKHEED GEORGIA COMPANY
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REPORT NO. ER 5473
MODEL C-41A (600B)
PAGE B-10

AERIAL DELIVERY PACKAGE DATA

FLIGHT 102
DROP S
PKG. WT. 18,330 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

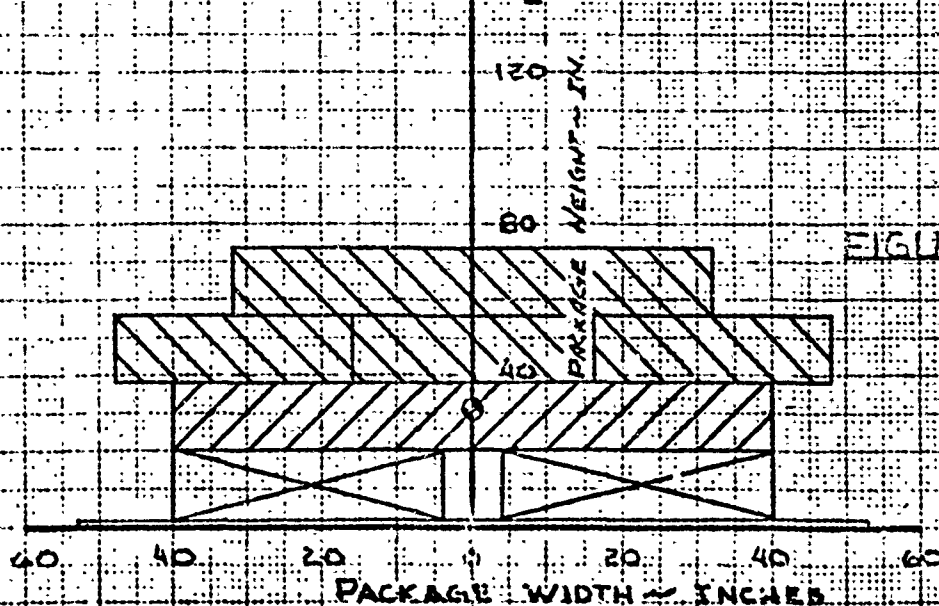


FIGURE B-9

600B
216

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

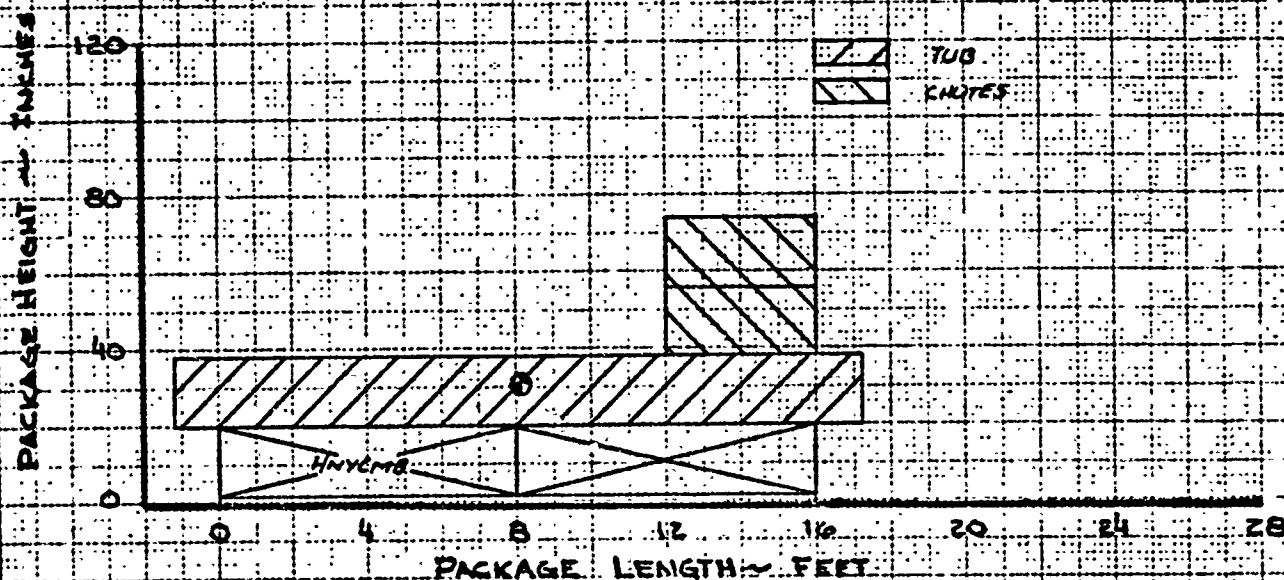
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-11

6008
217

AERIAL DELIVERY PACKAGE DATA

FLIGHT 103
DROP 10
PKG. WT. 13400 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C →

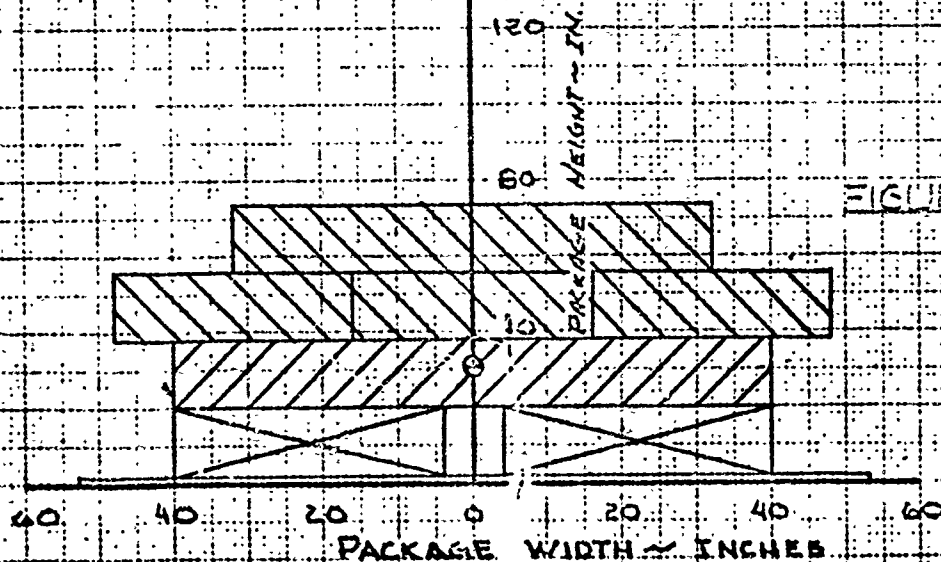


FIGURE 2-0

6008
217

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DATE *8-11-65*

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LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO *ER 5473*

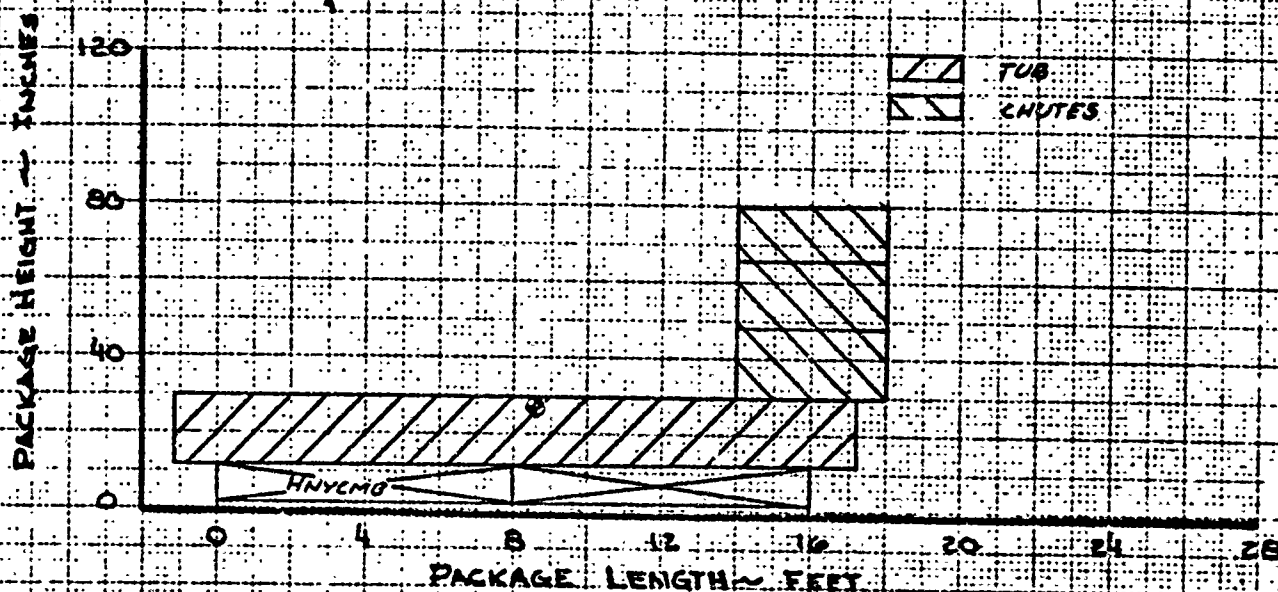
MODEL *C-119A- (6008)*

PAGE *B-12*

AERIAL DELIVERY PACKAGE DATA

FLIGHT *108*
DROP *11*
PKG. WT. *21,900* LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

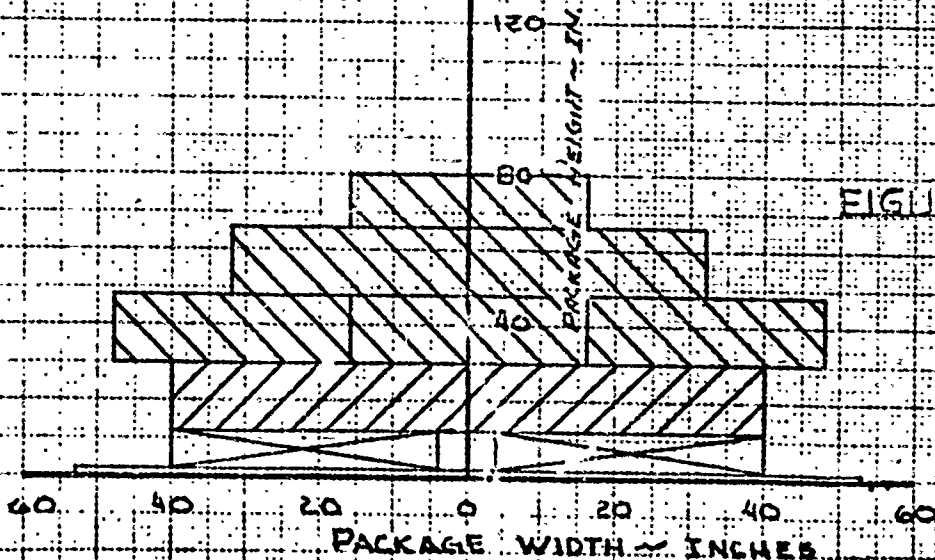


FIGURE B-11

6008
218

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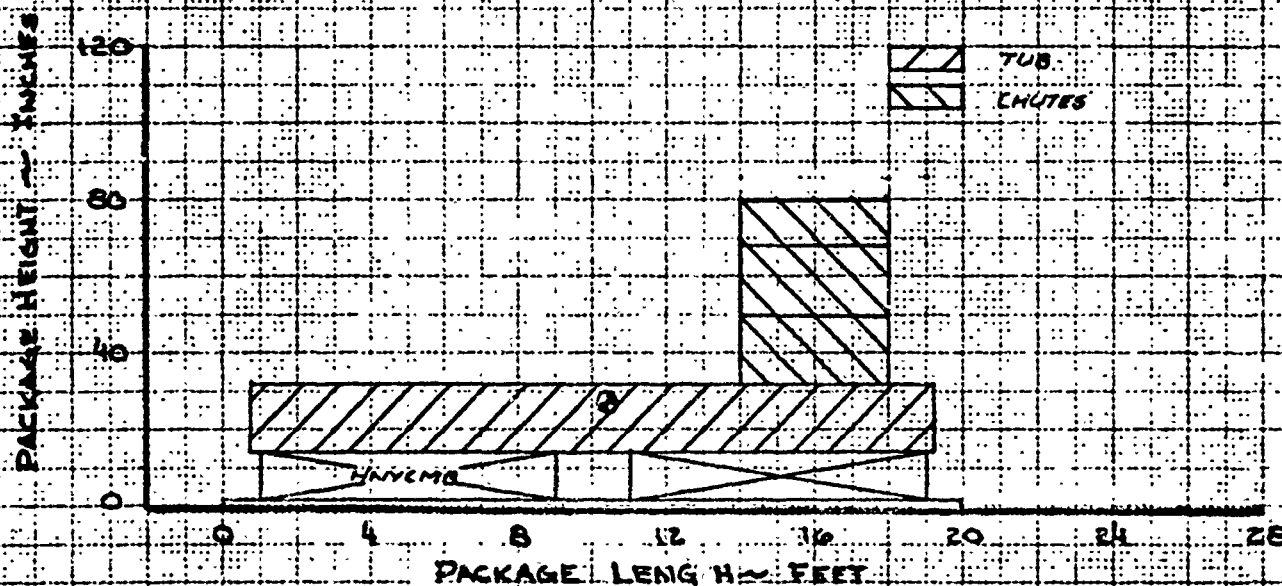
LOCKHEED-GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-13

AERIAL DELIVERY PACKAGE DATA

FLIGHT 111
DROP 12
PKG. WT. 23,830 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C ↓

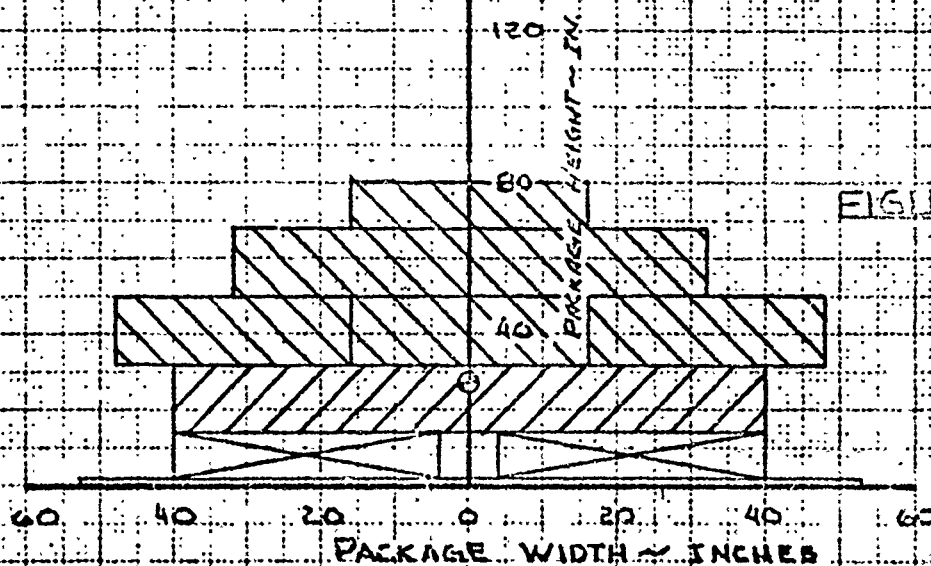


FIGURE B-12

6008
219

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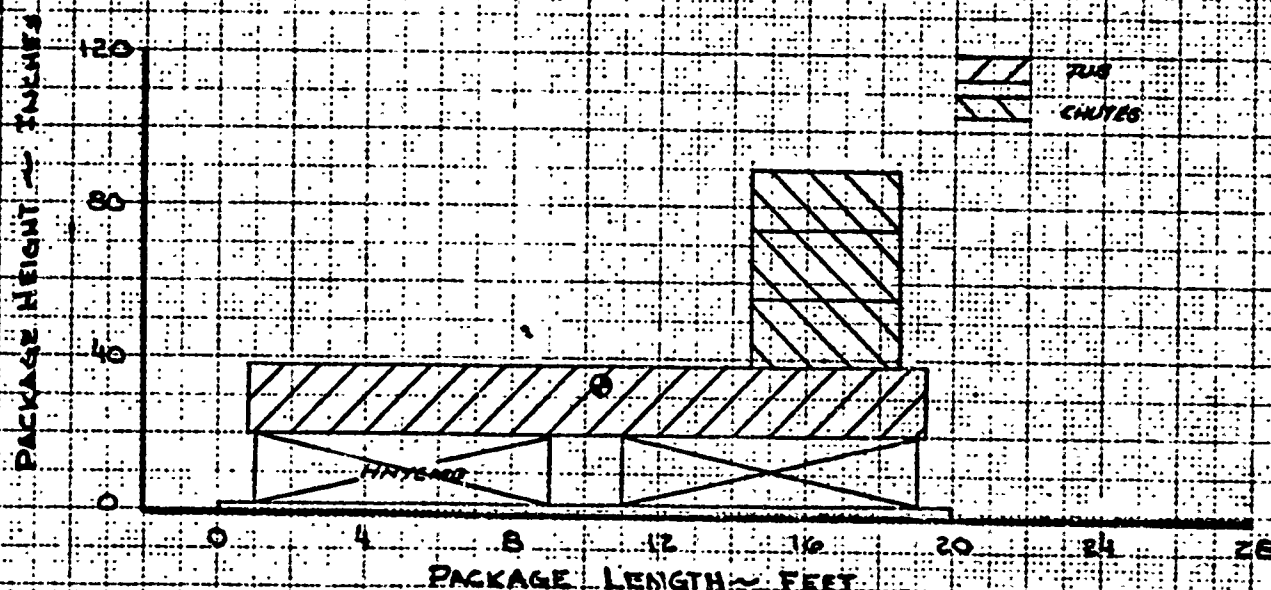
LOCKHEED-GEORGIA COMPANY
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REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-14

AERIAL DELIVERY PACKAGE DATA

FLIGHT 112
DROP 13
PKG. WT. 27,190 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD.)
A/C

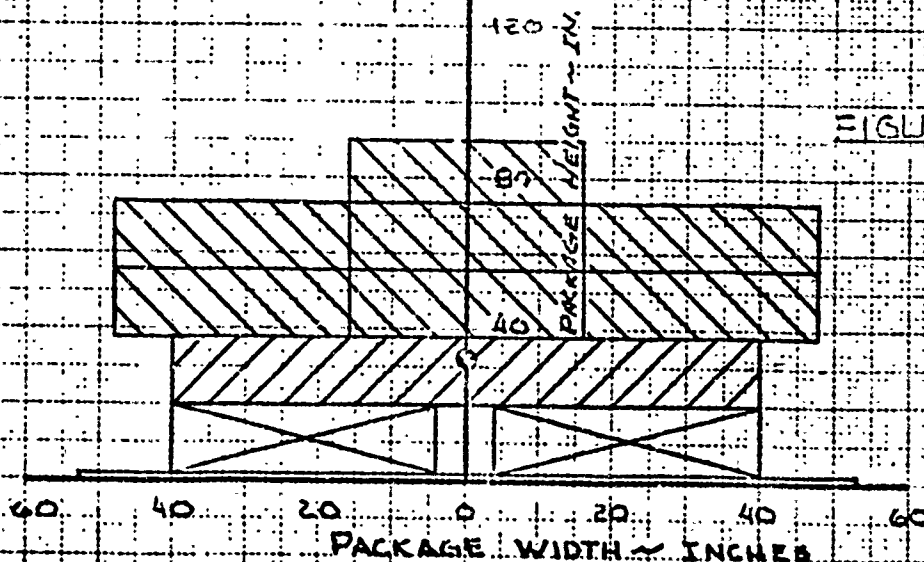


FIGURE E-13

6008
220

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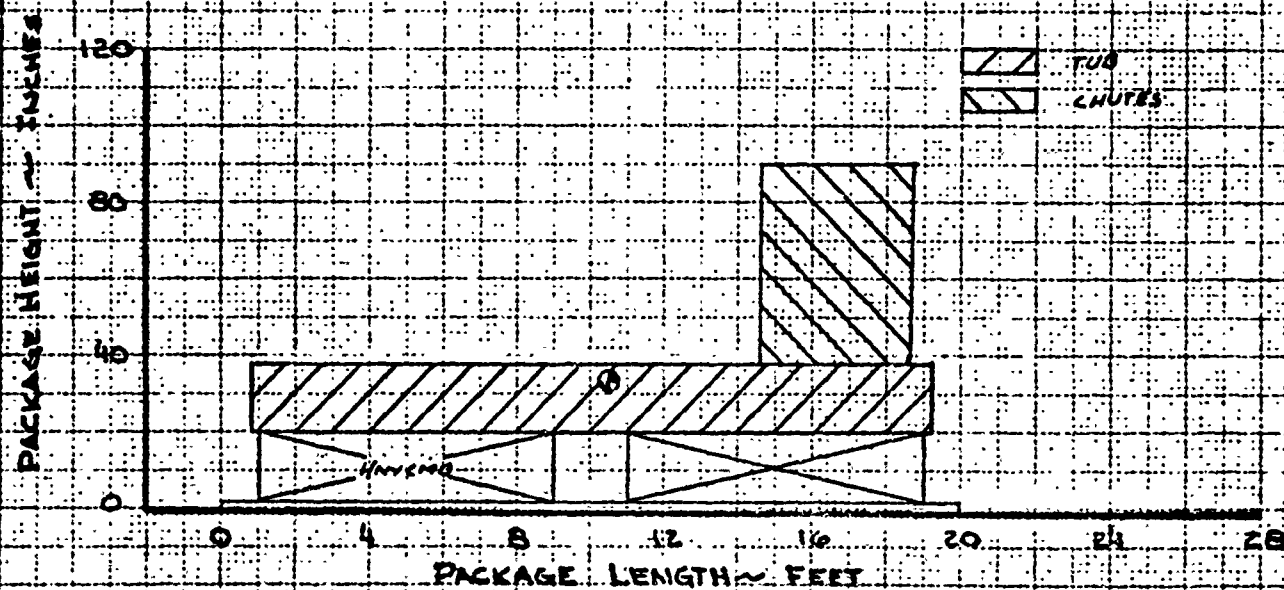
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-15

6008
221

AERIAL DELIVERY PACKAGE DATA

FLIGHT 113-117
DROP 14-14R
PKG. WT. 27,450 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

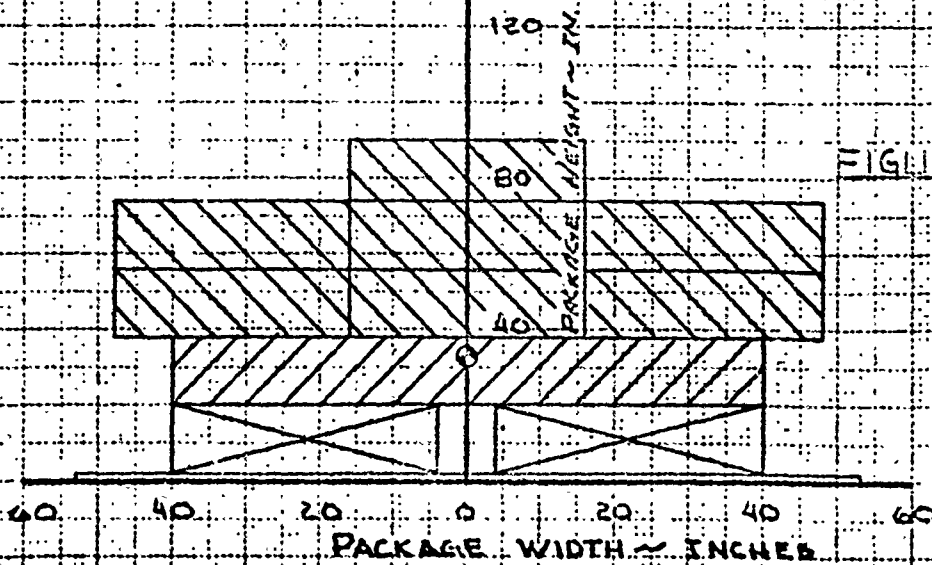


FIGURE P-14

6008
221

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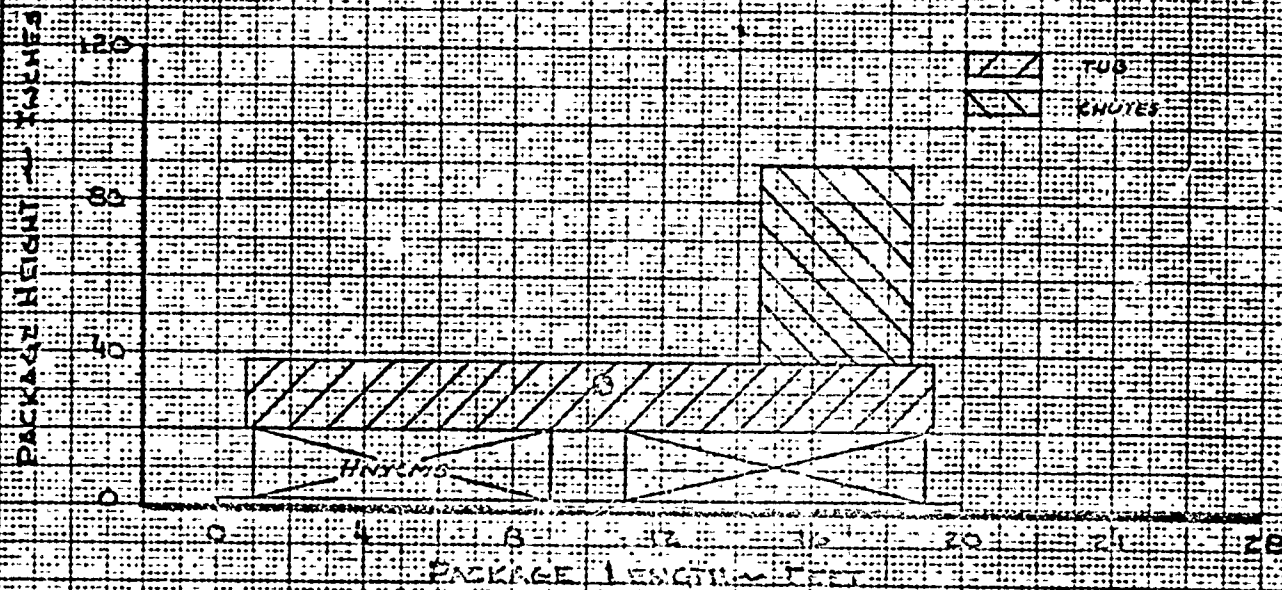
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (400A)
PAGE B-16

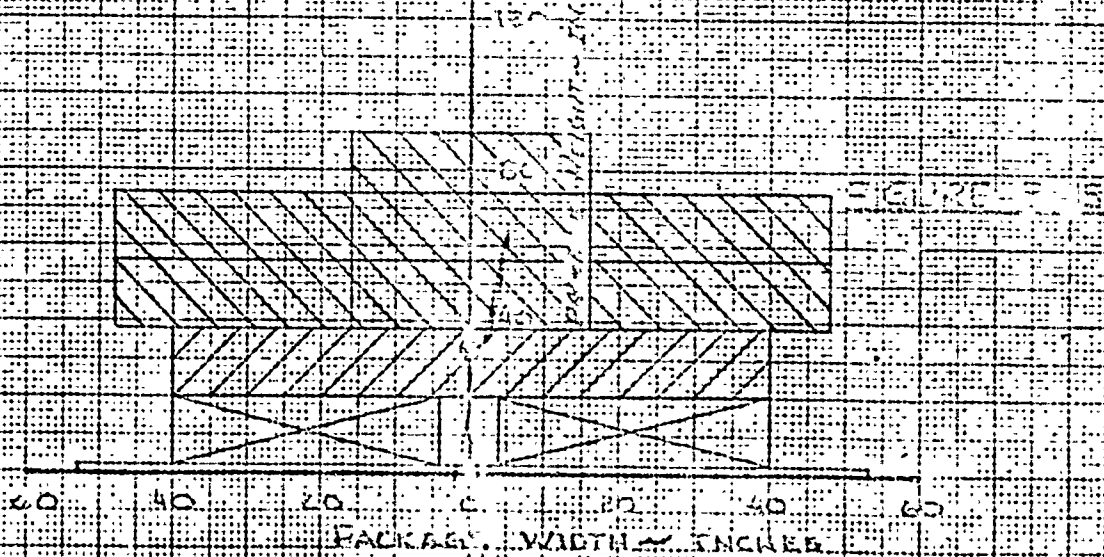
AIRIAL DELIVERY PACKAGE

FLIGHT 175
DOOP 15
PKG. WT. 27,930 LBS.

SIDE VIEW (FWD ON A/C ←)



END VIEW (LOOKING FWD)
NOT TO SCALE



PREPARED BY Pomerton
DATE 8-12-65
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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

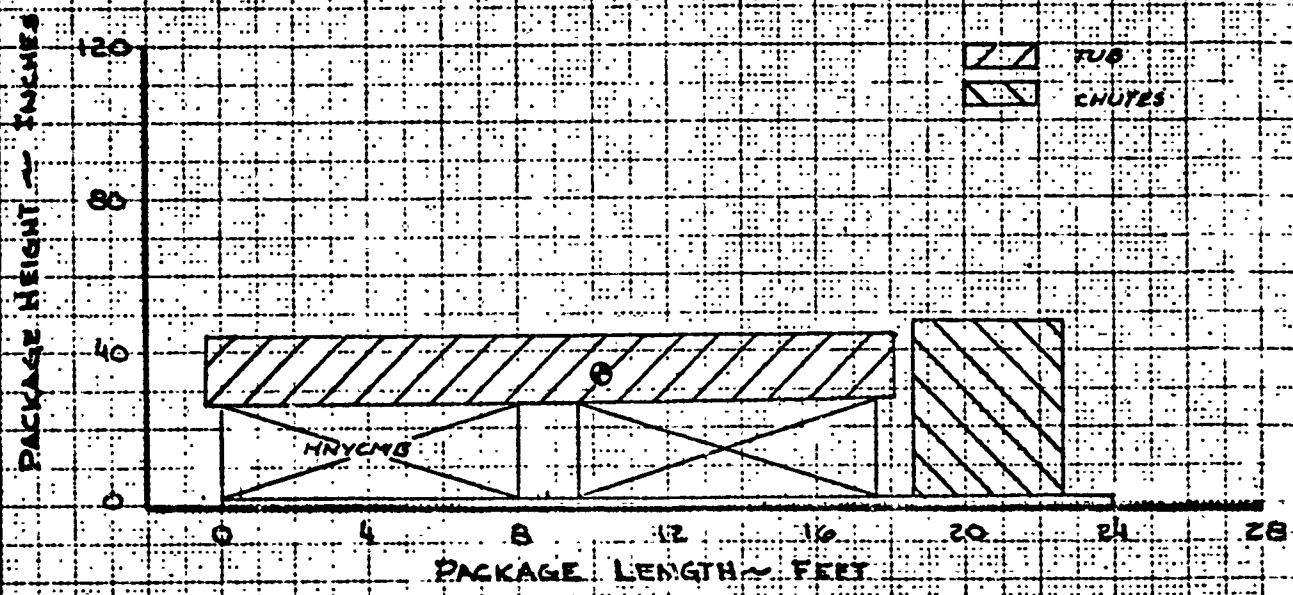
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-17

6008
223

AERIAL DELIVERY PACKAGE DATA

FLIGHT 119
DEOP 14
PKG. WT. 29,250 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ←

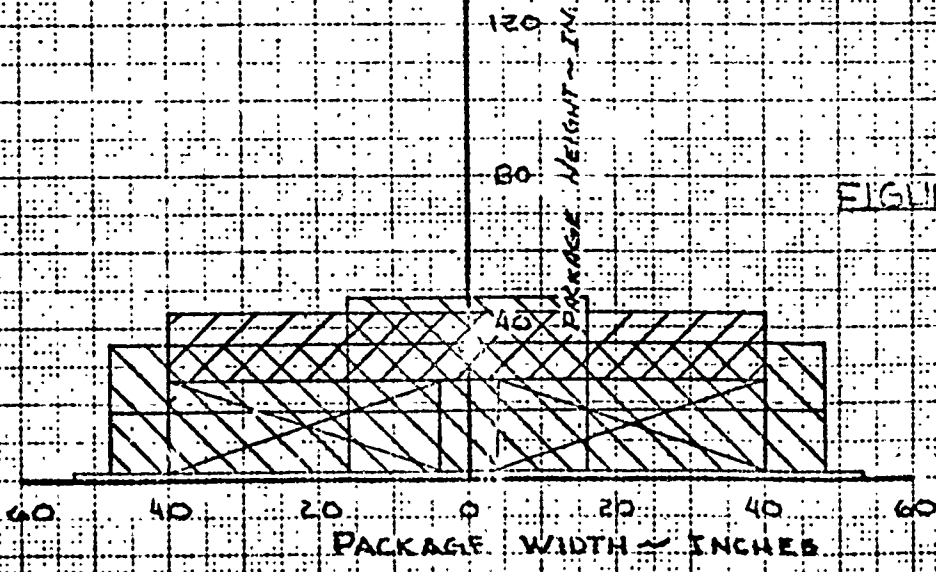


FIGURE B-16

6008
223

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DATE 8-12-65
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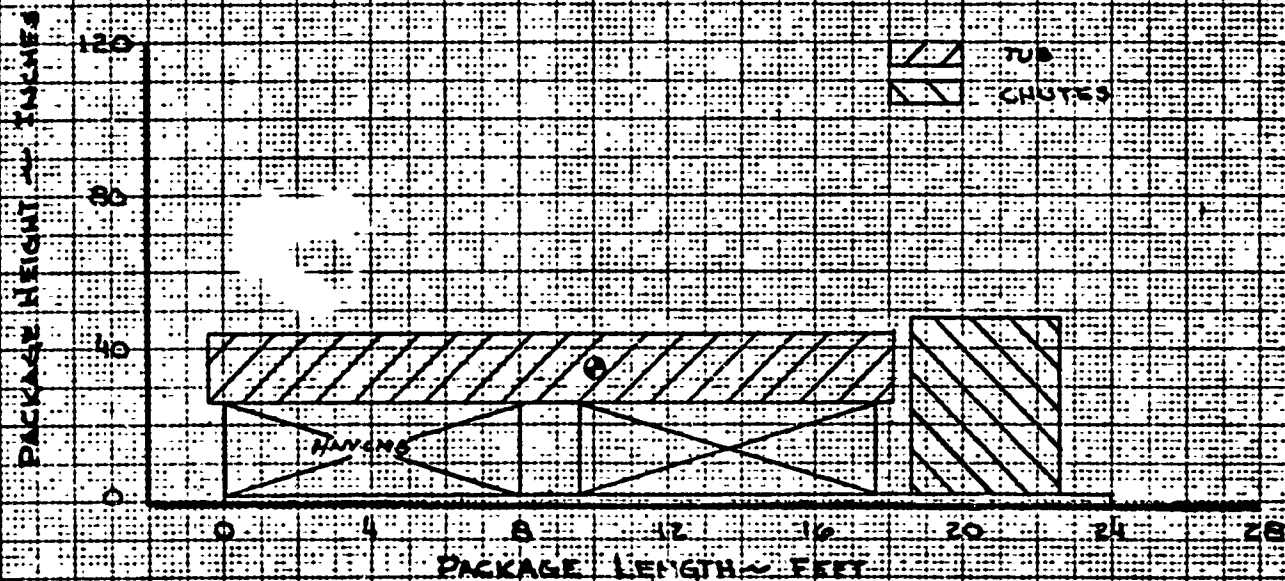
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-18

30
04
02
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AERIAL DELIVERY PACKAGE DATA

FLIGHT 120
DROP 17
PKG. WT. 32,030 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
AC &

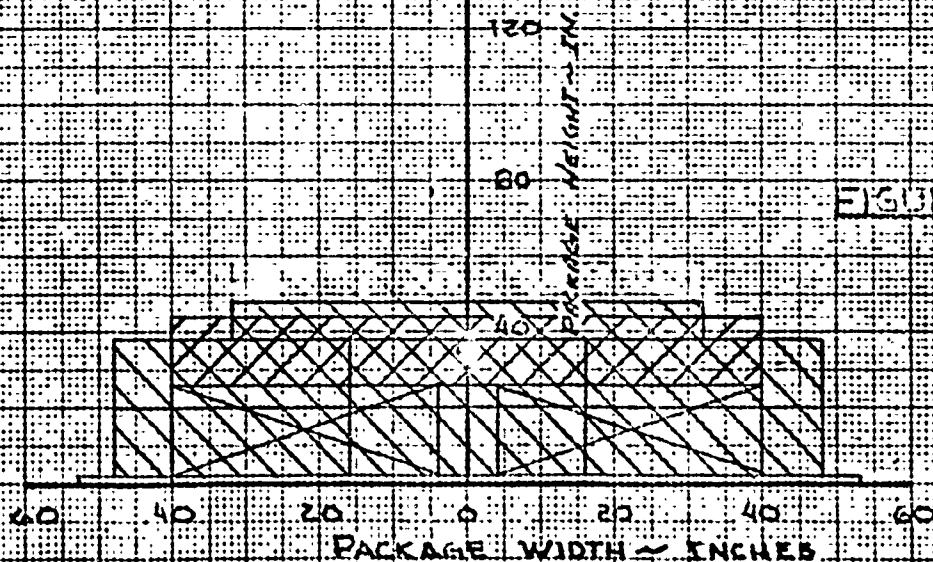


FIGURE P-17

6008
224

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DATE 8-12-65
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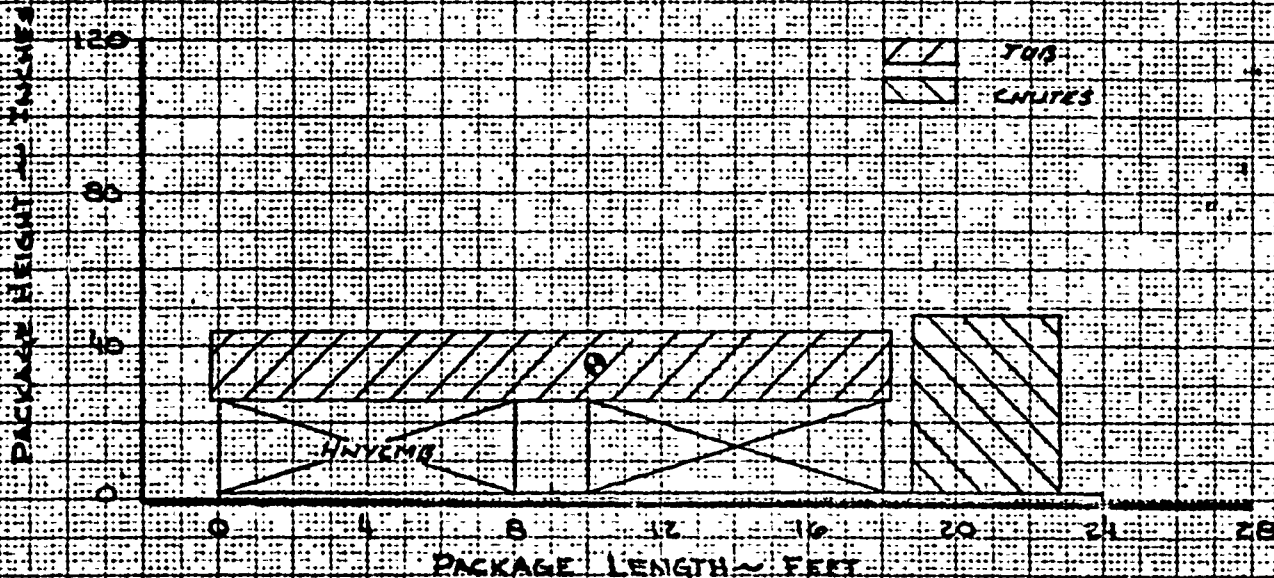
REPORT NO. ER 5473
MODEL C-141A (GXXB)
PAGE 8-19

6008
225

AERIAL DELIVERY PACKAGE DATA

FLIGHT 121
DROP 18
PKG. WT. 35,540 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
NYC &

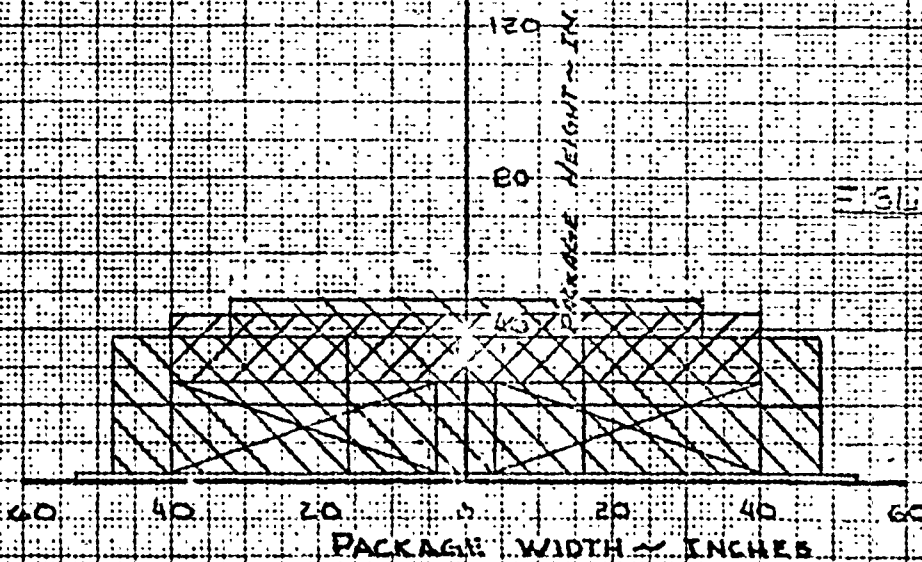


FIGURE B-B

6008
225

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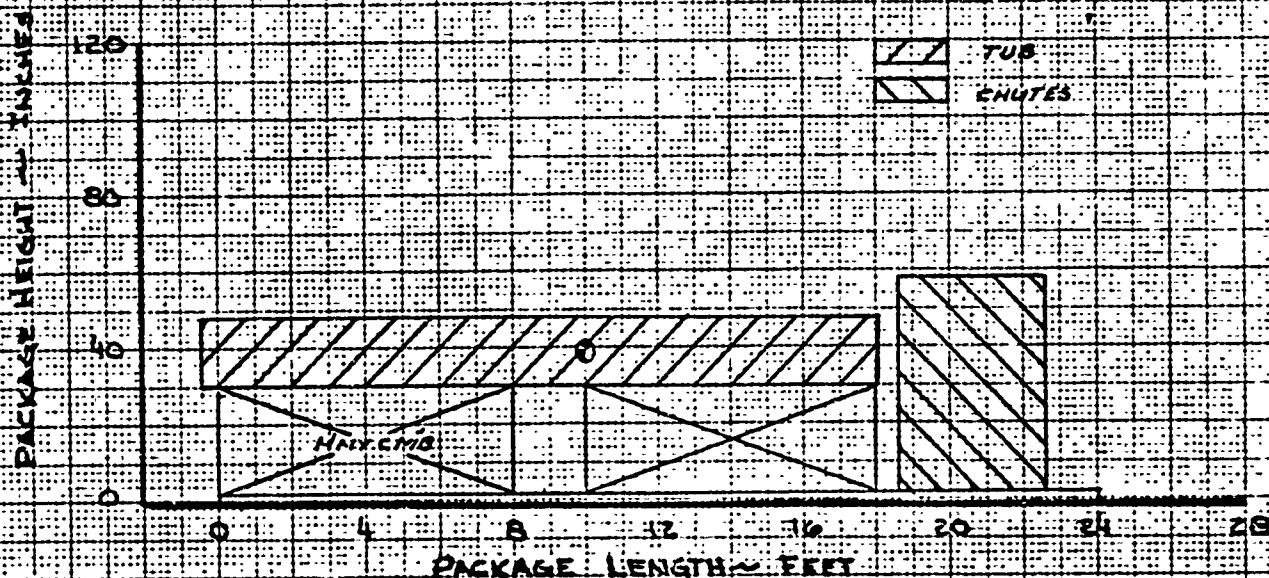
LOCKHEED-GEORGIA COMPANY
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REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-20

AERIAL DELIVERY PACKAGE DATA

FLIGHT 130
DEOP 19
PKG. WT. 35,710 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
A/C &

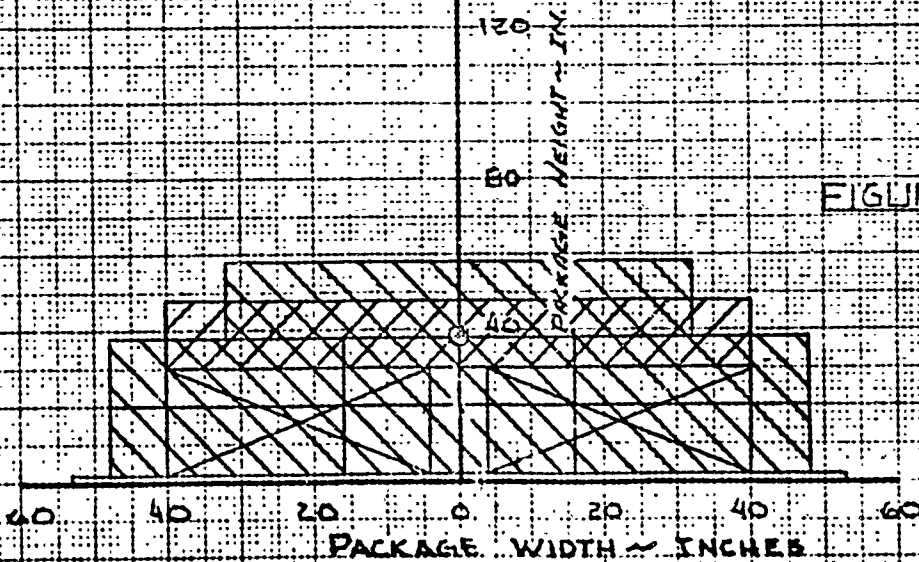


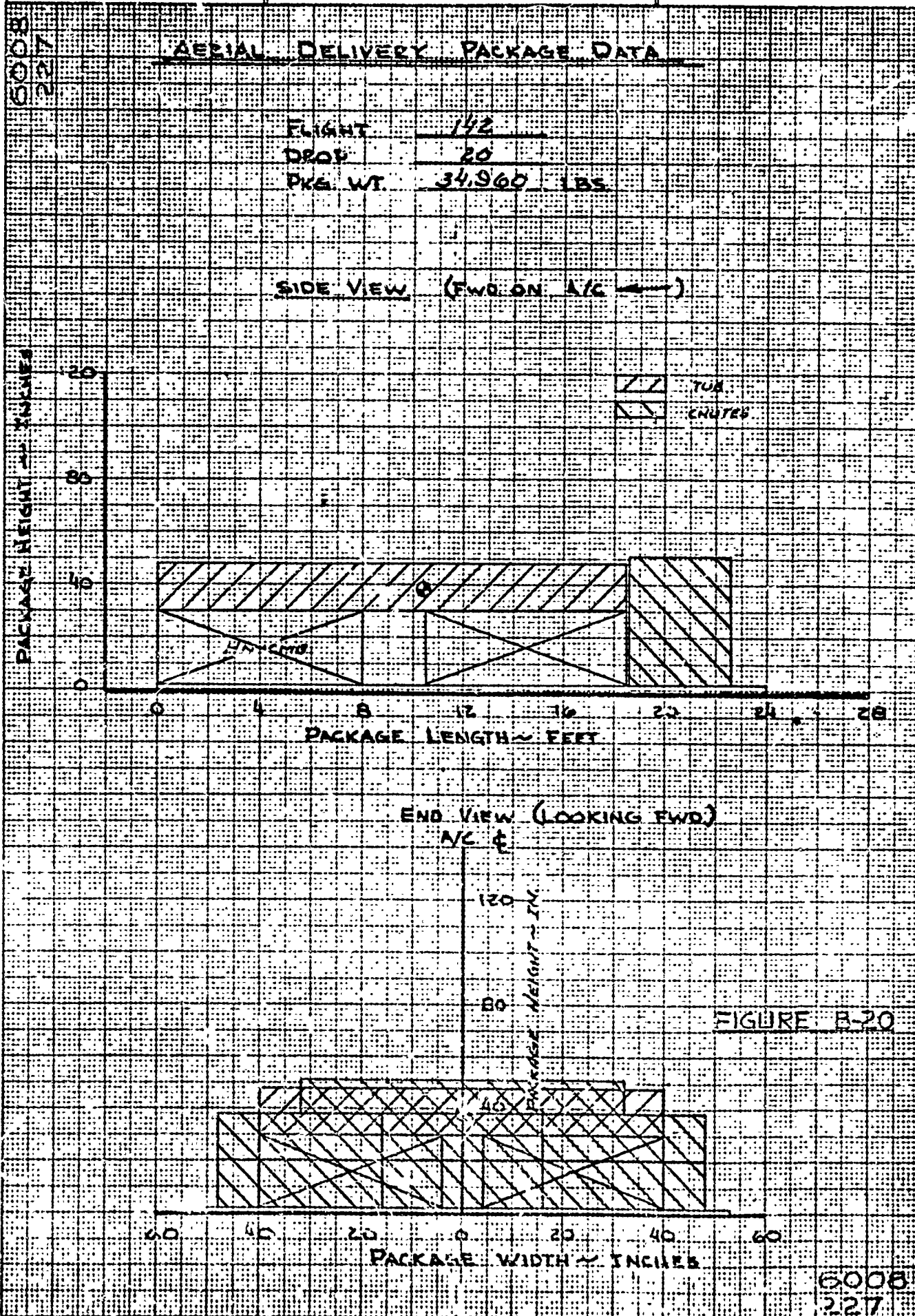
FIGURE E-19

6008
226

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DATE 8-12-65
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REPORT NO. PR 5473
MODEL C-141A (6008)
PAGE B-21



PREPARED BY Pemberton
DATE 8-13-65
CHECKED BY ✓

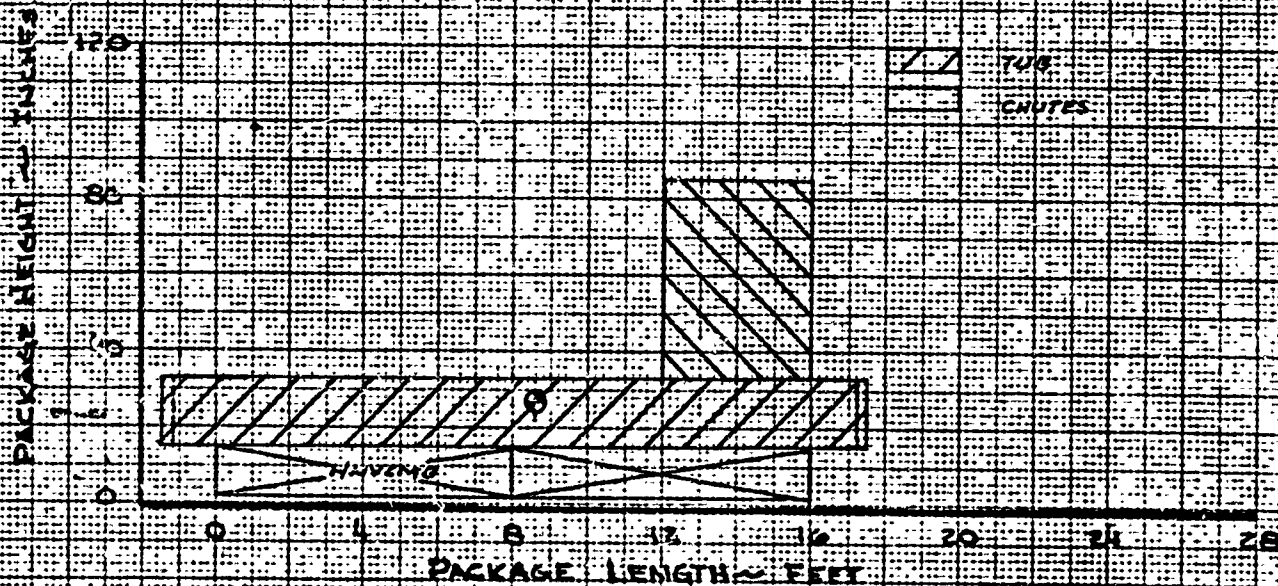
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MODEL C-141A (6008)
PAGE B-22

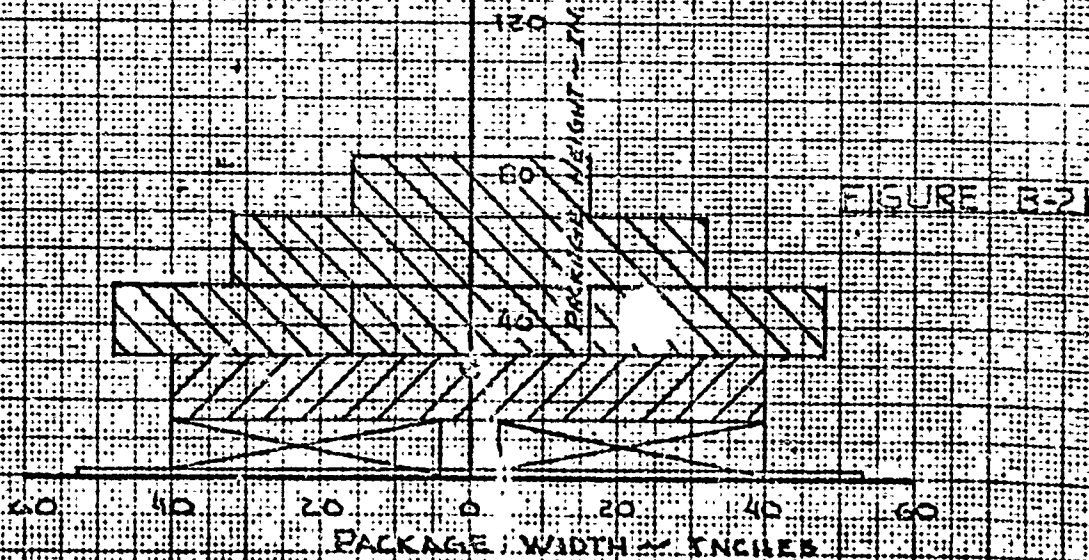
AERIAL DELIVERY PACKAGE DATA

FLIGHT 123
ORLP 21
PKG WT. 21350 LBS

SIDE VIEW (FWD ON A/C)



END VIEW (LOOKING FWD) AC &



PREPARED BY Timberfor
DATE 8-20-68
CHECKED BY V

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

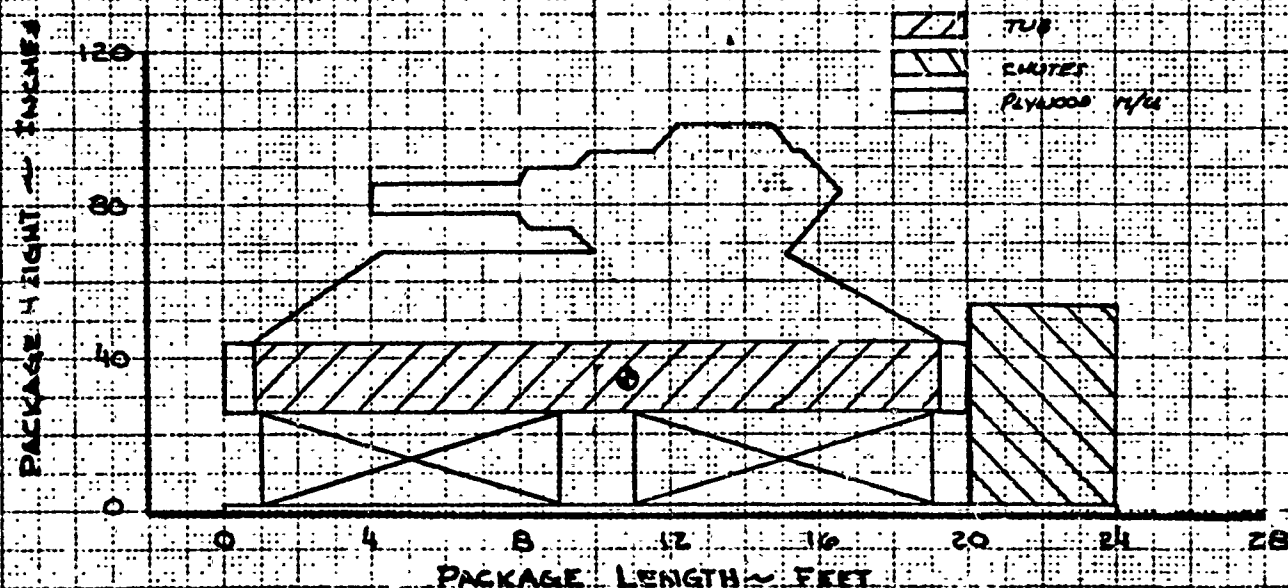
REPORT NO. ER 5473
MODEL C-41A (600B)
PAGE B-23

6008
229

AERIAL DELIVERY PACKAGE DATA

FLIGHT 139
DROP 22 (AR/AAV)
PKG. WT. 34400 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) N/C &

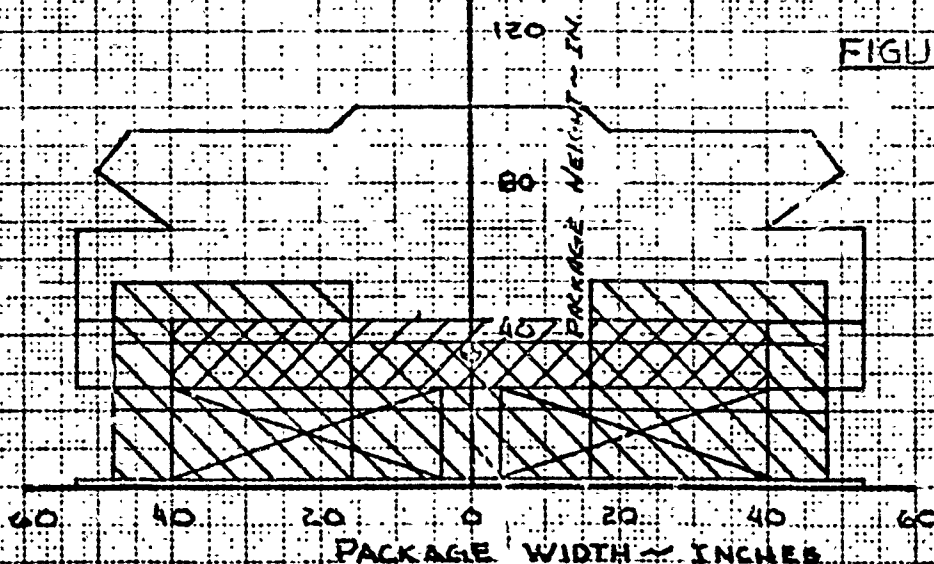


FIGURE B-22

6008
229

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 DATE 8-24-65
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LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

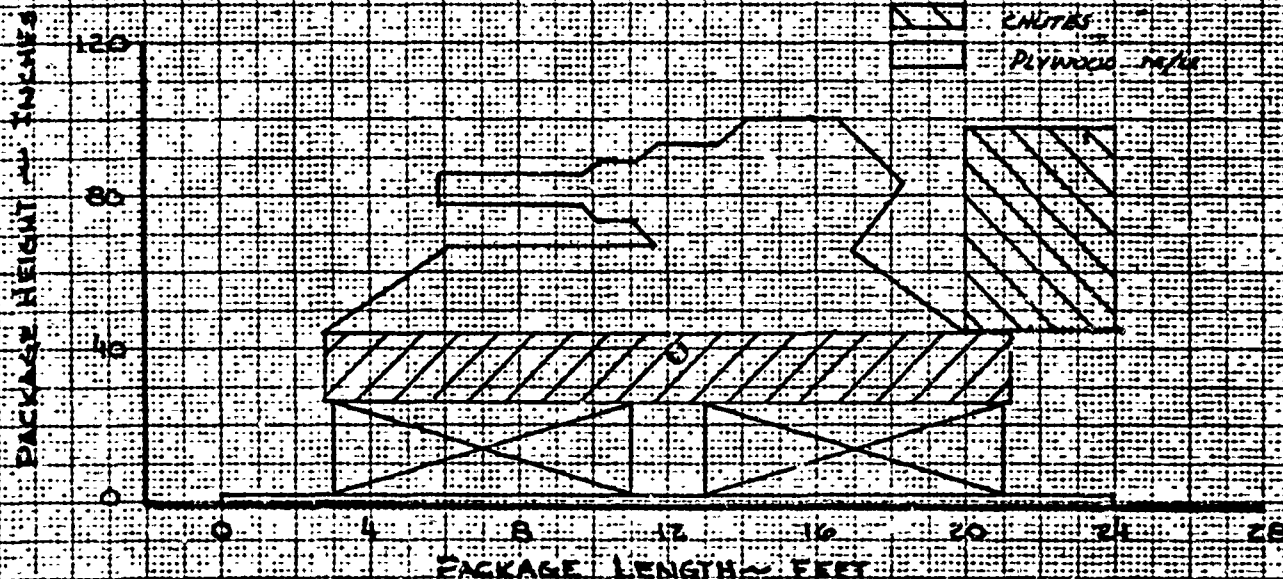
REPORT NO. FR 5473
 MODEL G-41A (6008)
 PAGE B-2A

6008
230

AERIAL DELIVERY PACKAGE DATA

FLIGHT 168
 DROP 22R
 PKG. WT. 35050 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ↓

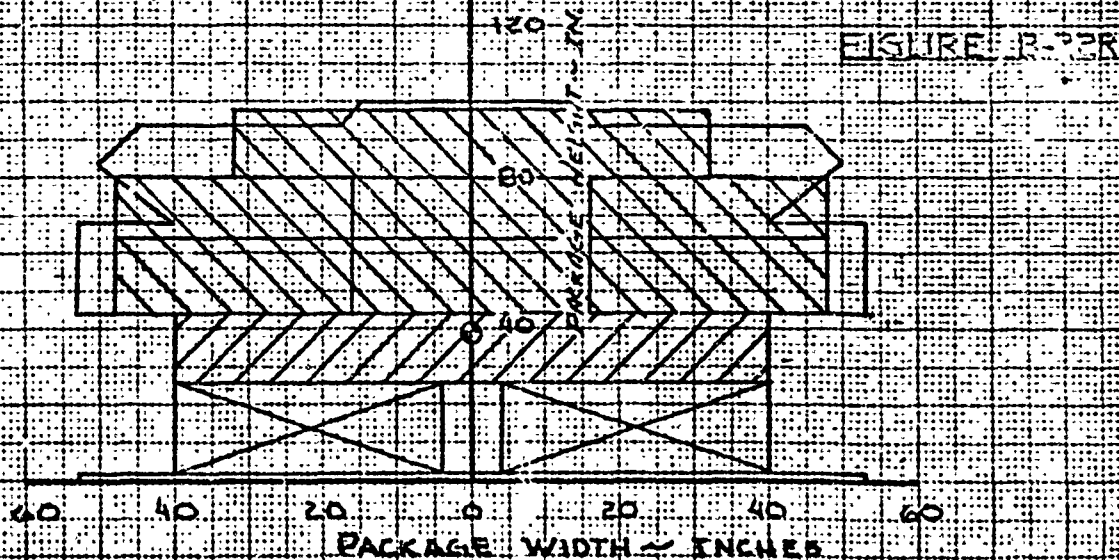


FIGURE R-2R

6008
230

PREPARED BY Timberlon
DATE 8-24-65
CHECKED BY _____

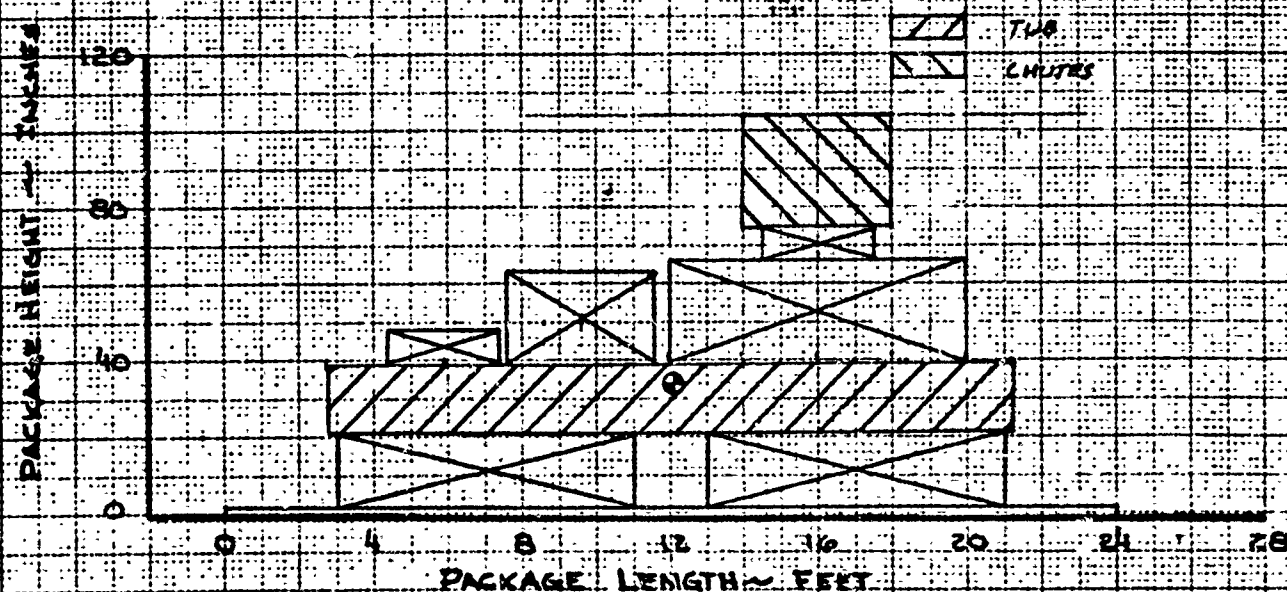
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-25

AERIAL DELIVERY PACKAGE DATA

FLIGHT 170
DROP 22R-2
PKG. WT. 19,700 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C &

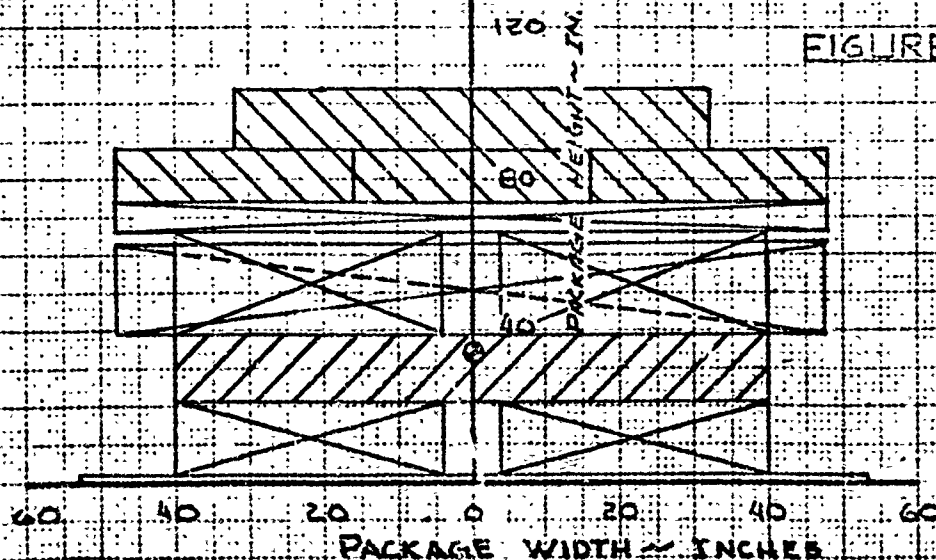


FIGURE B-22R-2

6008
231

PREPARED BY *Pemberfon*
 DATE *8-31-65*
 CHECKED BY *✓*

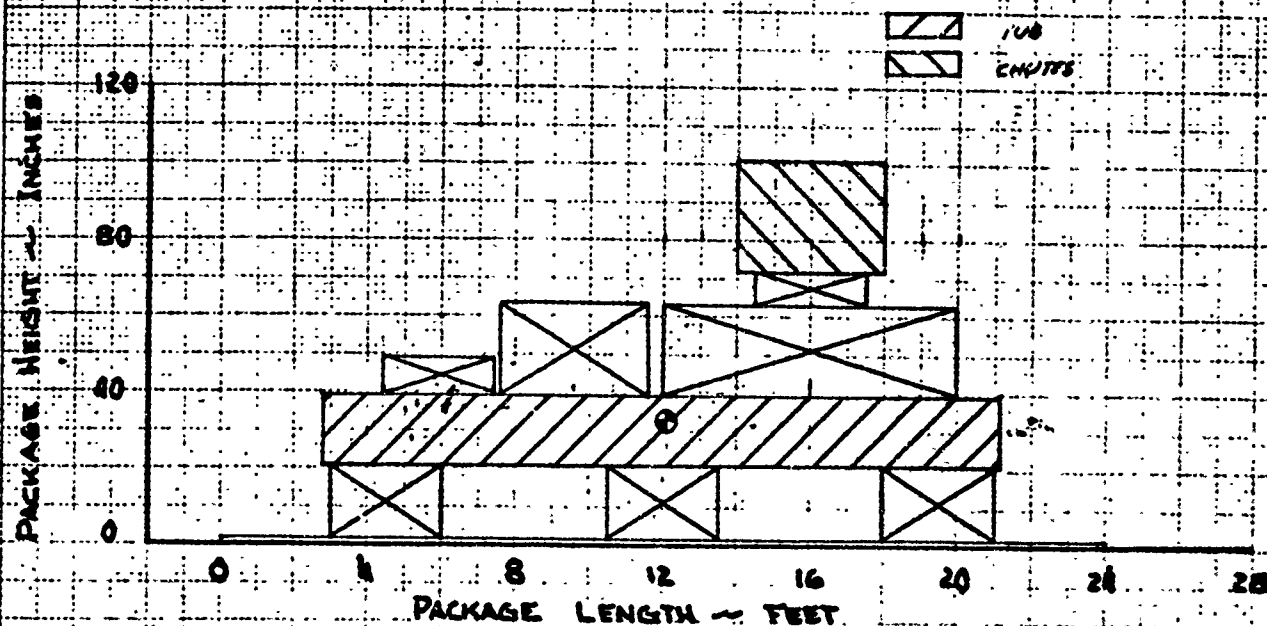
LOCKHEED-GEORGIA COMPANY
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REPORT NO. *ER 5473*
 MODEL *C-141A (6008)*
 PAGE *B-26*

AERIAL DELIVERY PACKAGE DATA

FLIGHT *172 - 173*
 DROP *22R-3, 22R-4*
 PKG. WT. *18900, 19650 LBS.*

SIDE VIEW (FWD. ON A/C ←)



END VIEW (1 SKING FWD.)

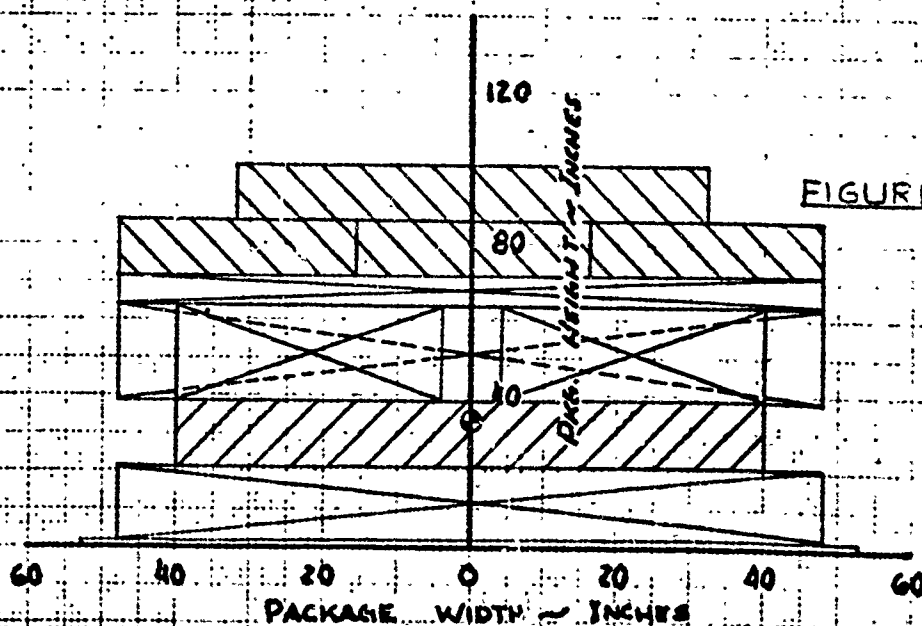


FIGURE B-22R-3

6008
 232

PREPARED BY Pemberton
DATE 8-17-55
CHECKED BY /

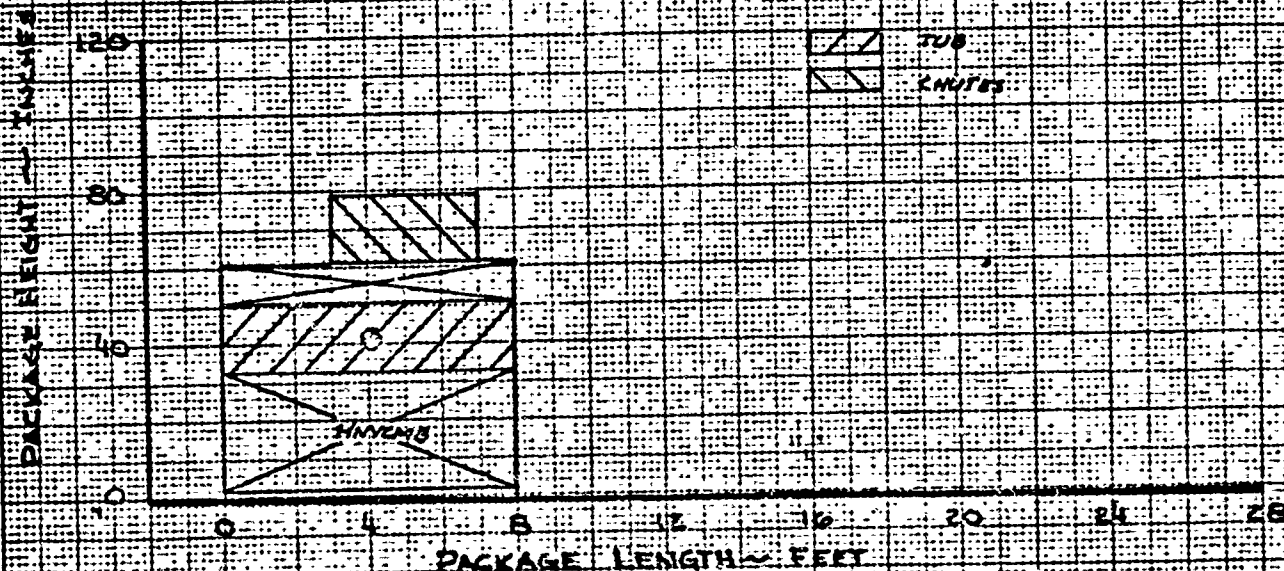
LOCKHEED-GEORGIA COMPANY
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REPORT NO. ER 5473
MODEL C-41A (6008)
PAGE B-27

AERIAL DELIVERY PACKAGE DATA

FLIGHT 127
DROP 23
PKG WT. 6.060 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
N.E. 1/4

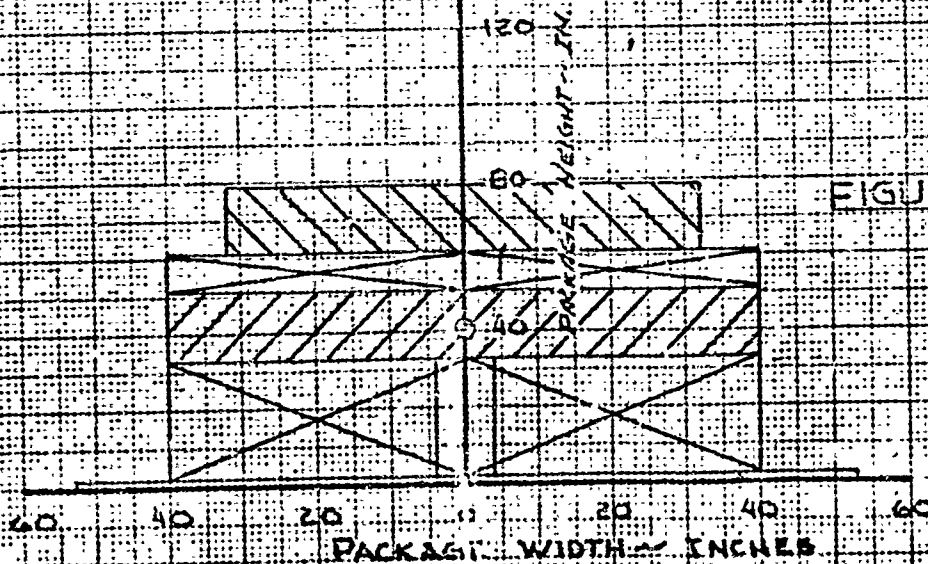


FIGURE B-23

6008
233

PREPARED BY Pamberger
DATE 8-13-65
CHECKED BY V

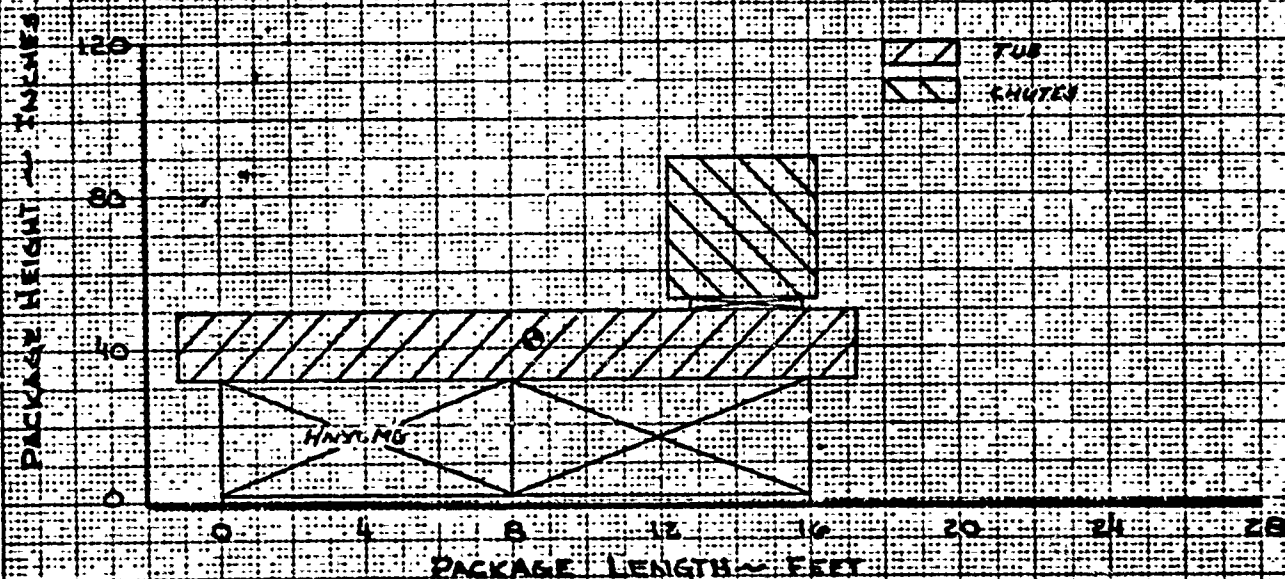
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-28

AERIAL DELIVERY PACKAGE DATA

FLIGHT 128
DROP 24
PKG. WT. 21,550 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD) N/C

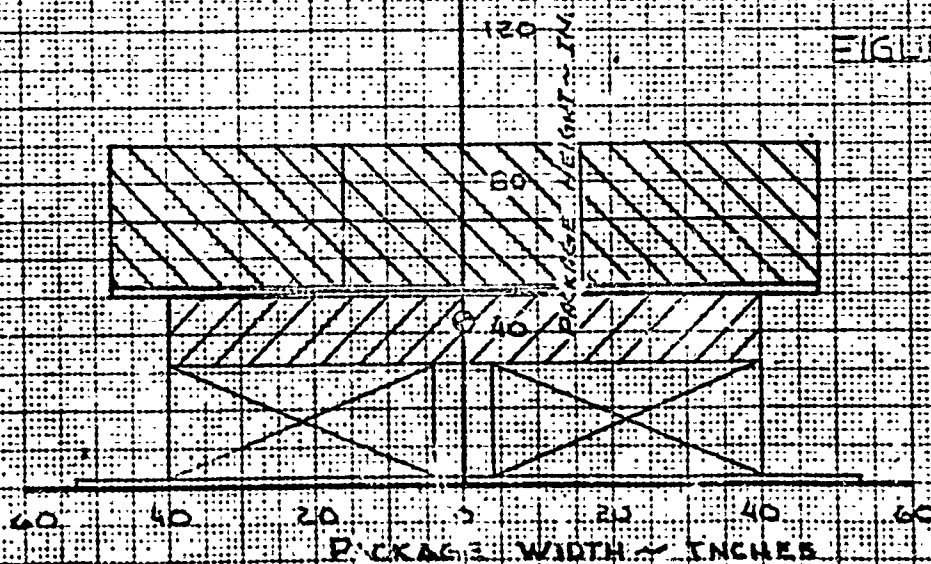


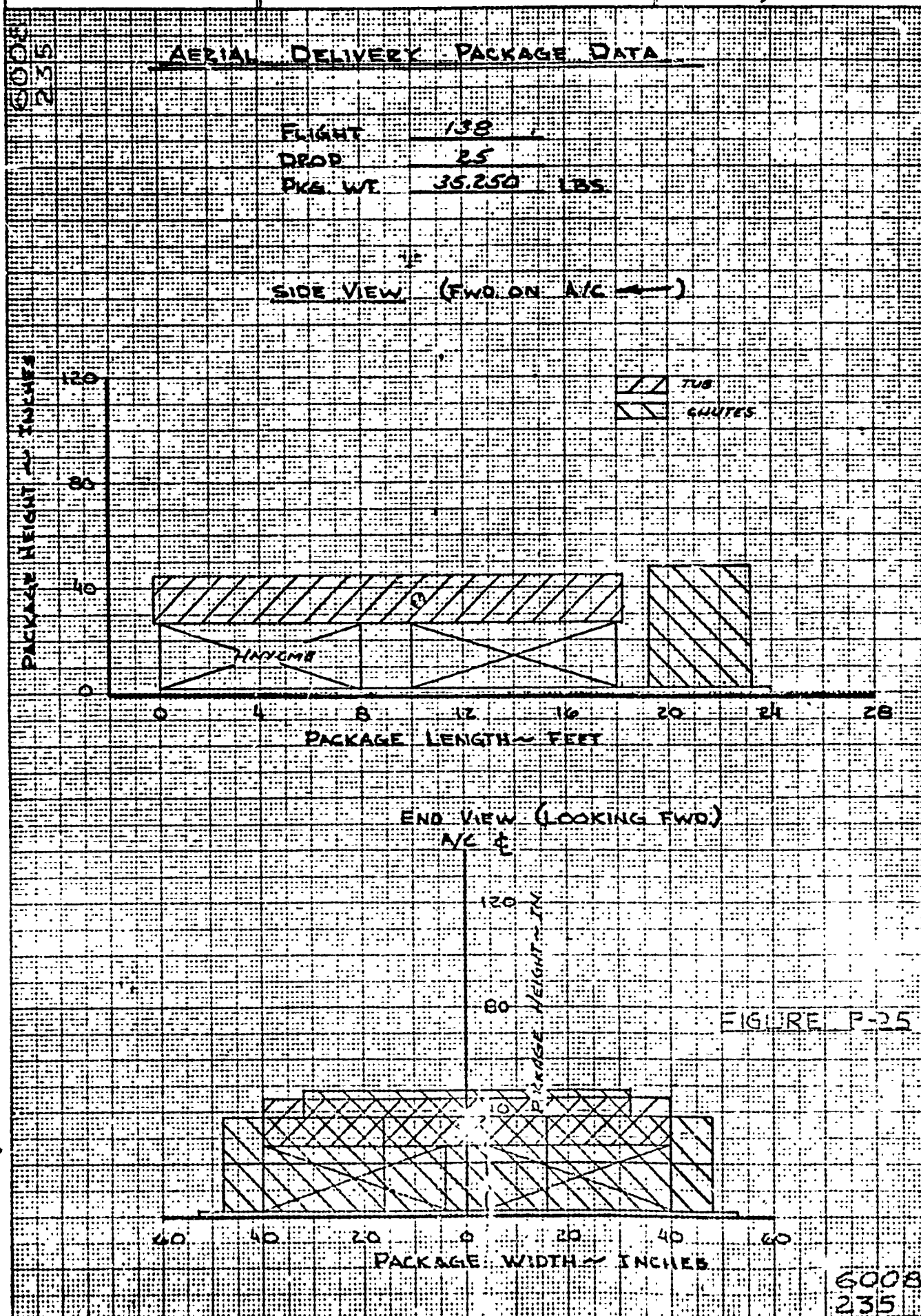
FIGURE B-24

600B
234

PREPARED BY Pemberton
DATE 8-12-65
CHECKED BY ✓

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-29



PREPARED BY Pemberton
DATE 8-13-65
CHECKED BY ✓

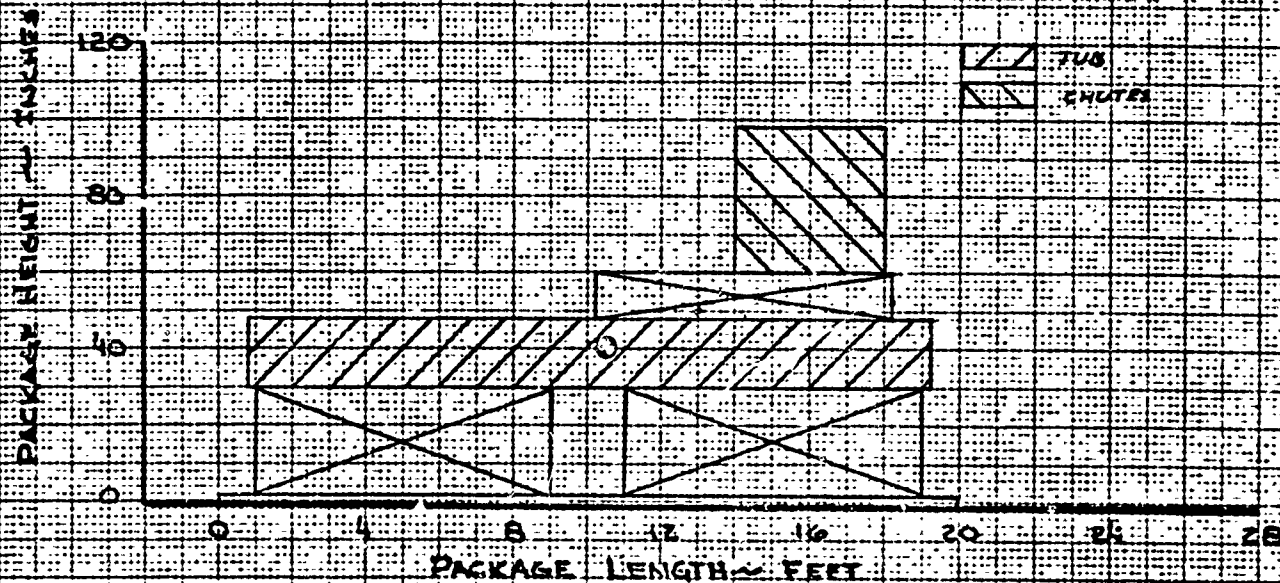
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141B (6008)
PAGE B-30

AERIAL DELIVERY PACKAGE DATA

FLIGHT 129
DROP 26
PKG. WT. 23,440 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
NE E

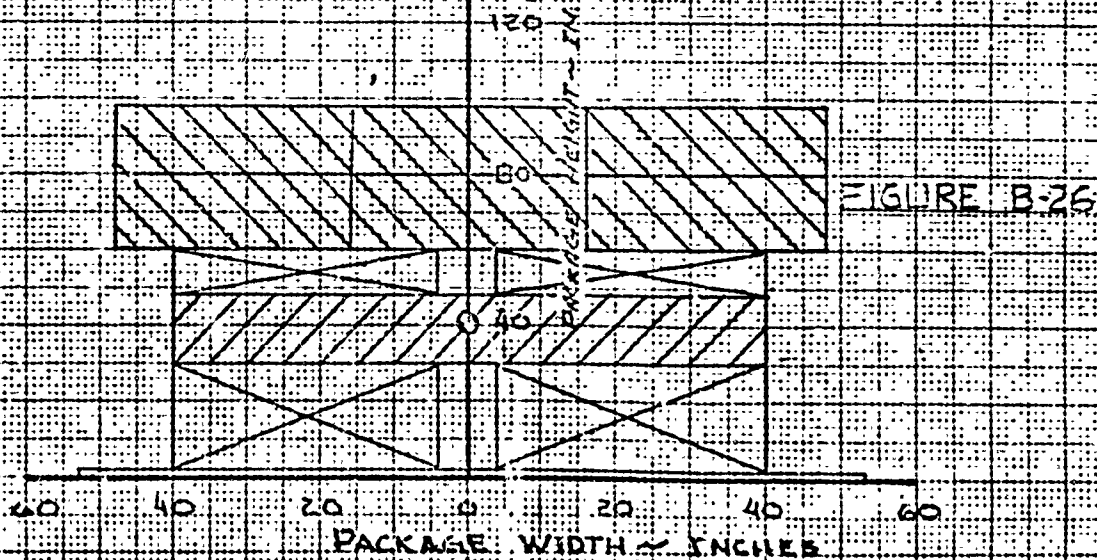


FIGURE B-26

6008
236

PREPARED BY Pemberfoa
DATE 8-13-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

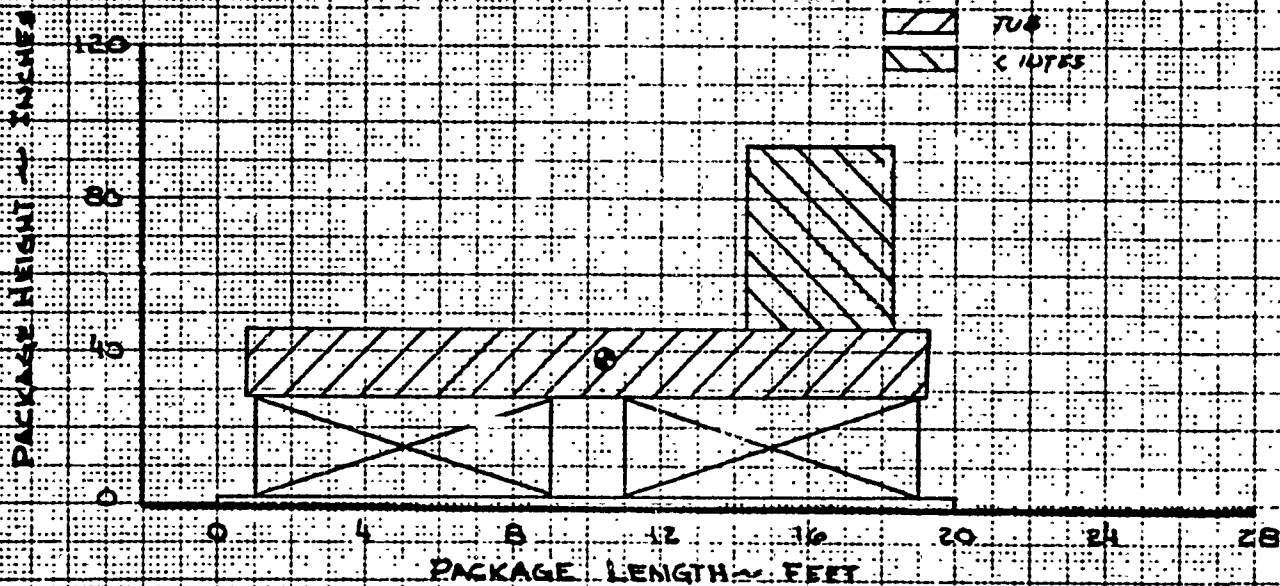
REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-31

6008
237

AERIAL DELIVERY PACKAGE DATA

FLIGHT 141
DROP 27
PKG. WT. 23,750 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C ↓

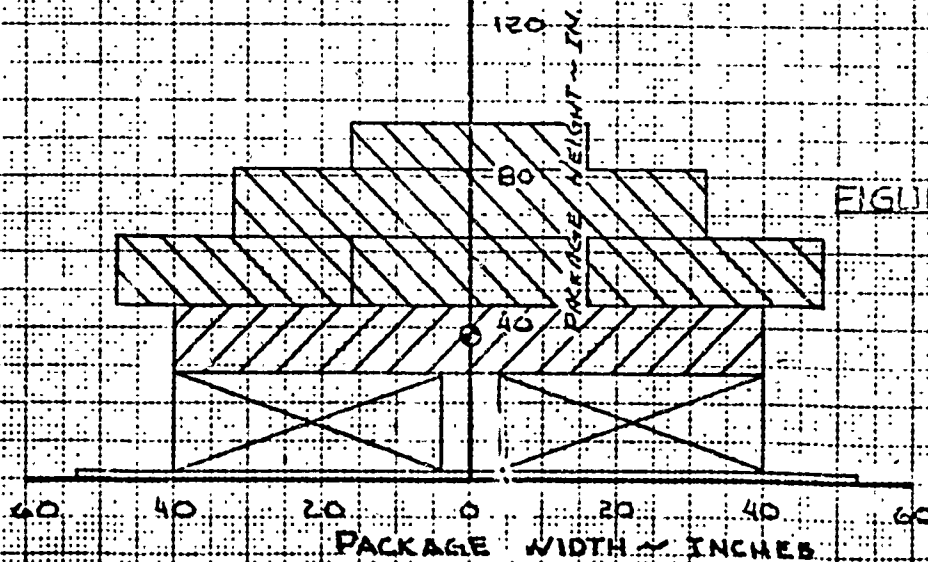


FIGURE B-27

6008
237

PREPARED BY Pemberton
DATE 10-18-68
CHECKED BY ✓

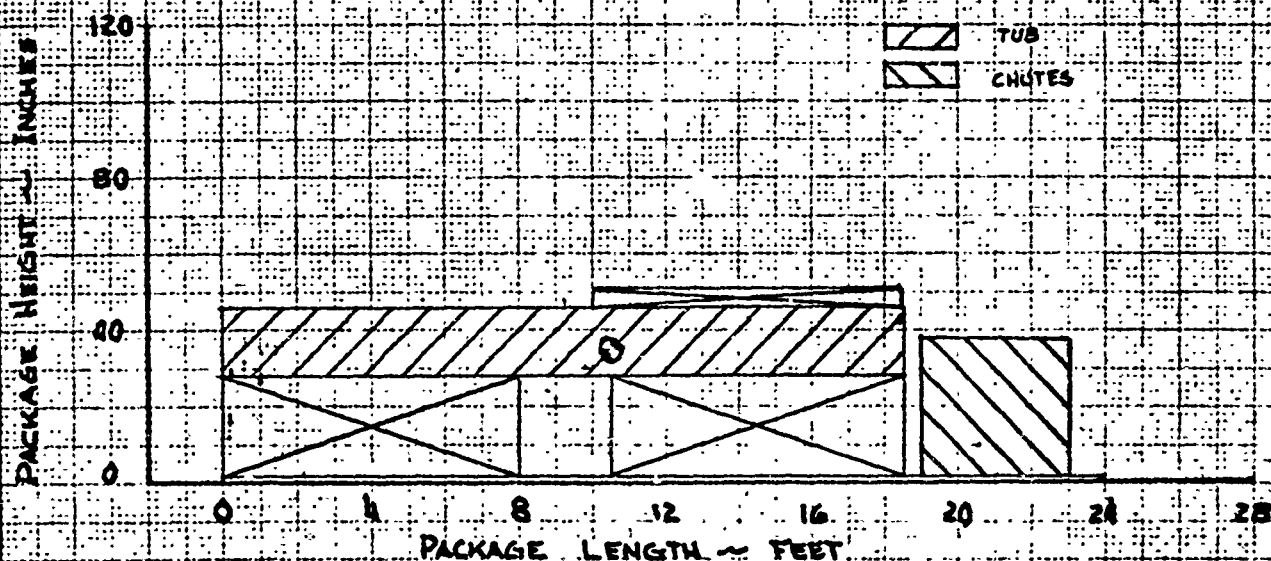
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-32

AERIAL DELIVERY PACKAGE DATA

FLIGHT 188
DROP 28
PKG. WT. 34,700 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)

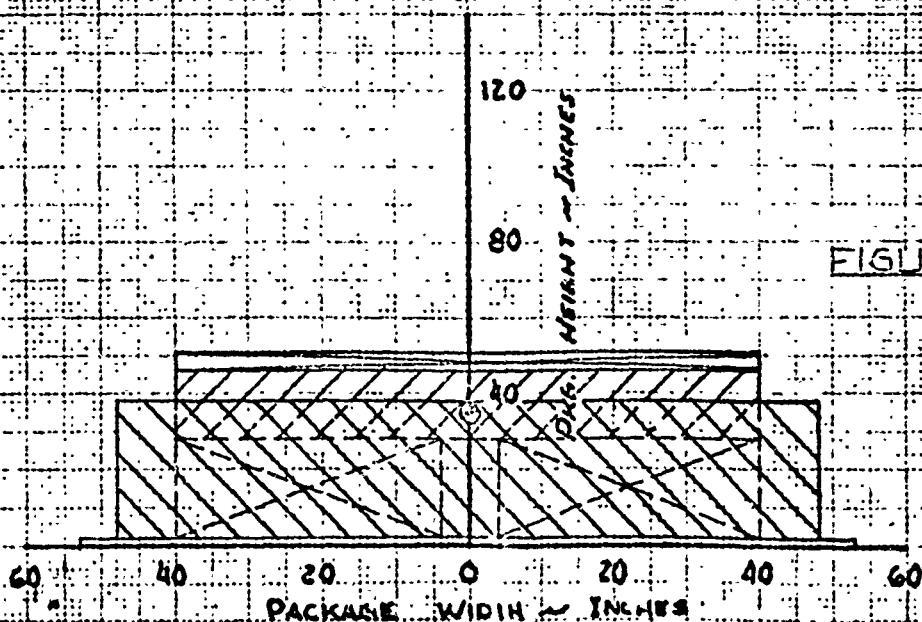


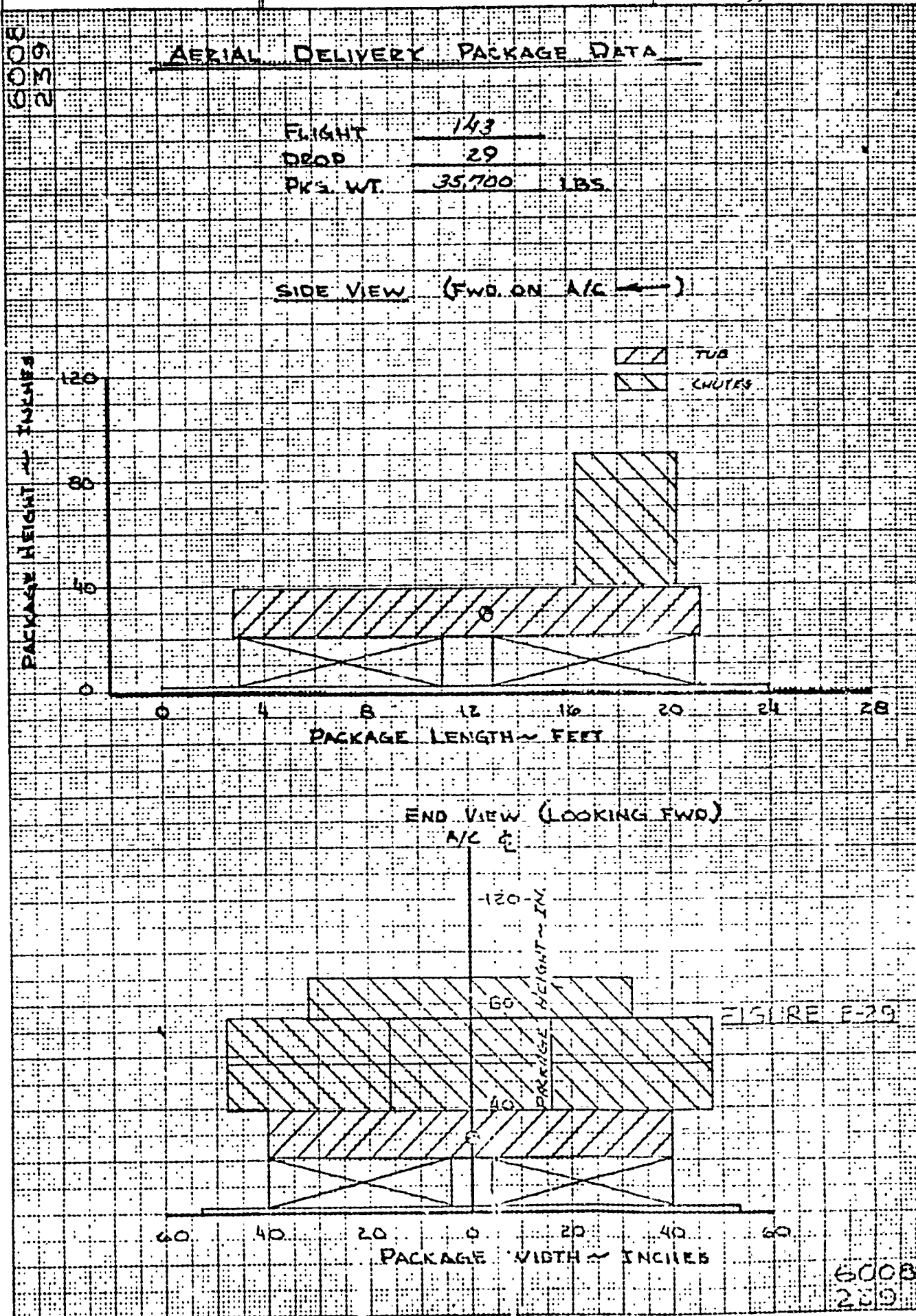
FIGURE B-28

6008
238

PREPARED BY Pamberger
DATE 8-13-65
CHECKED BY L

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A (6008)
PAGE D-33



PREPARED BY *Pemberton*
DATE *9-14-65*
CHECKED BY *✓*

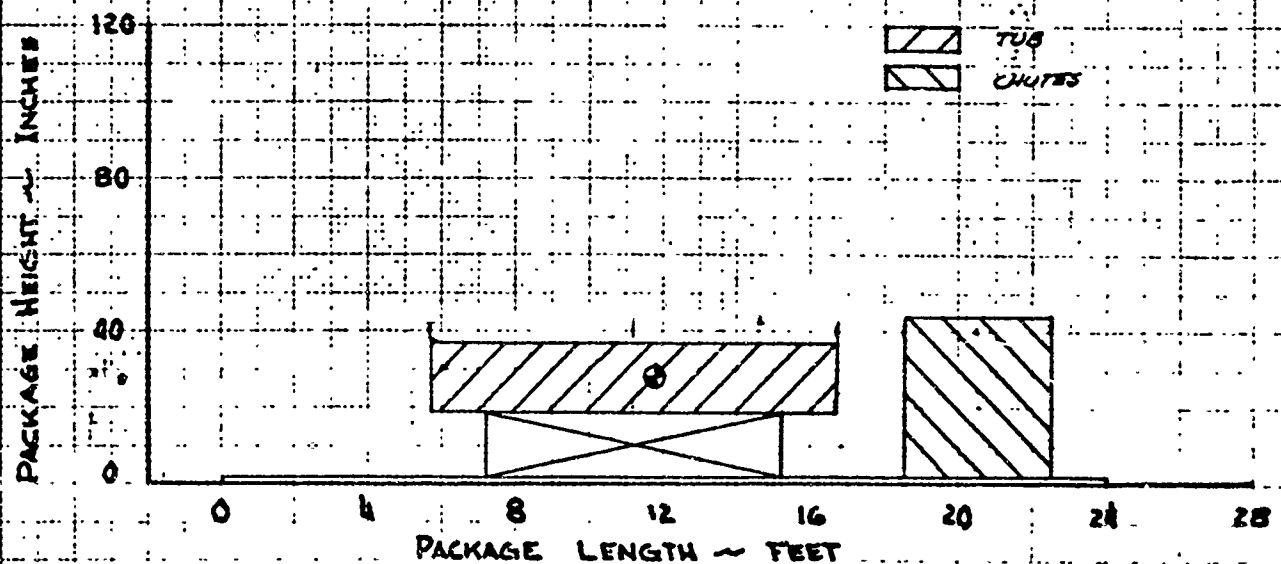
LOCKFIELD, GEORGIA COMBAT
AIRFIELD, NEW YORK

REPORT NO. *ER 5473*
C-141A (6008)
PAGE *B-34*

AERIAL DELIVERY PACKAGE DATA

FLIGHT 183
DROP 30
PKG. WT. 21,050 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

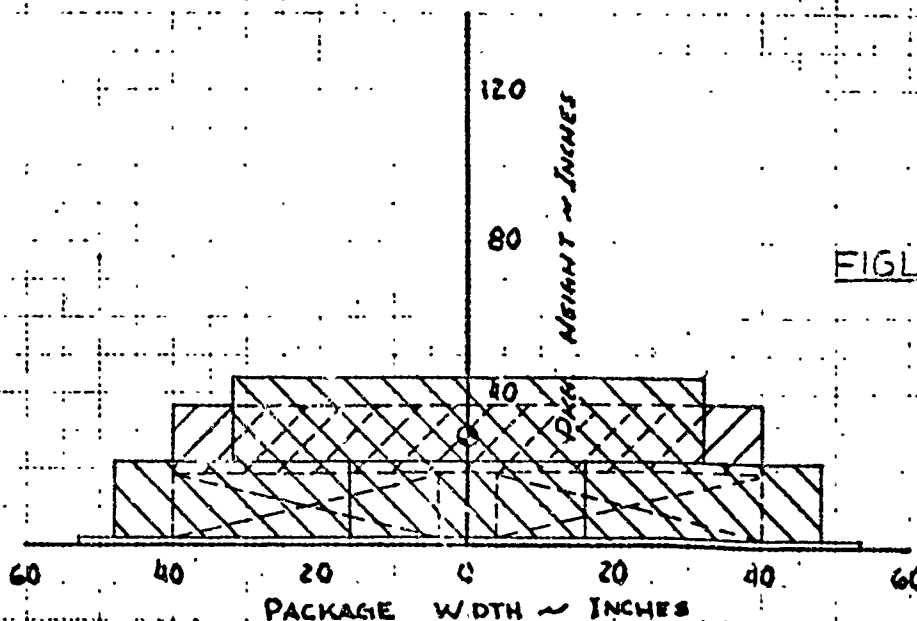


FIGURE B-30

6008
240

PREPARED BY *Pamberford*
DATE *9-20-68*
CHECKED BY *✓*

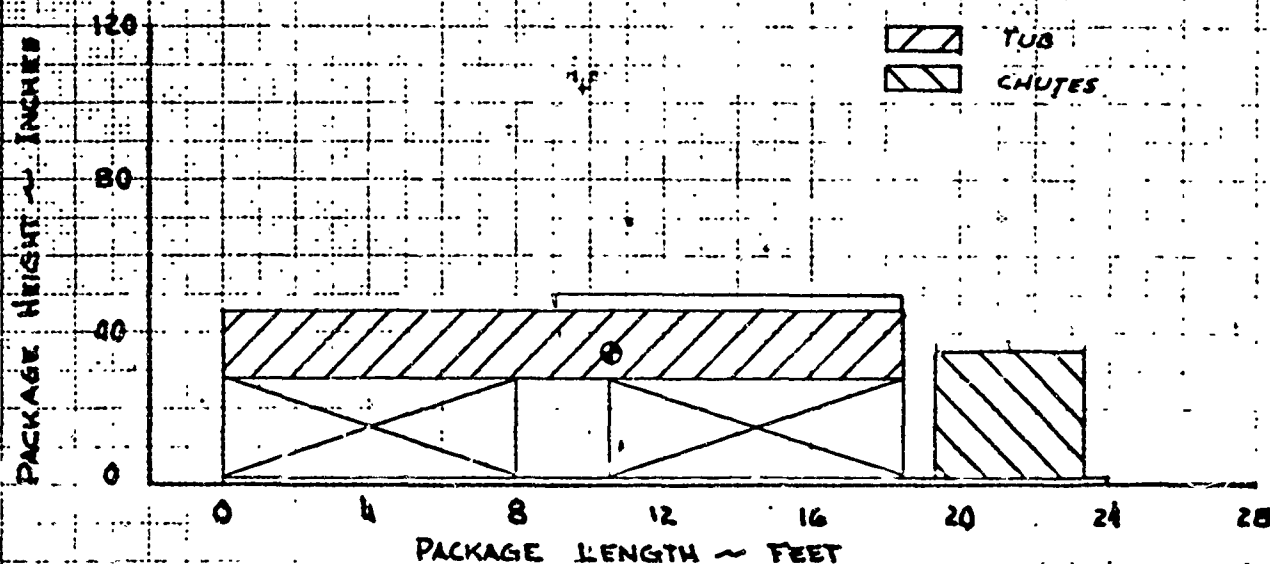
LOCKHEED GEORGIA COMPANY
DIVISION OF LOCKHEED MARTIN CORPORATION

REPORT NO. *ER 5473*
MODEL *C-41A (6008)*
PAGE *B-35*

AERIAL DELIVERY PACKAGE DATA

FLIGHT 184
DROP 31
PKG. WT. 21,330 LBS.

SIDE VIEW (FWD. OF A/C ←)



END VIEW (LOOKING FWD.)

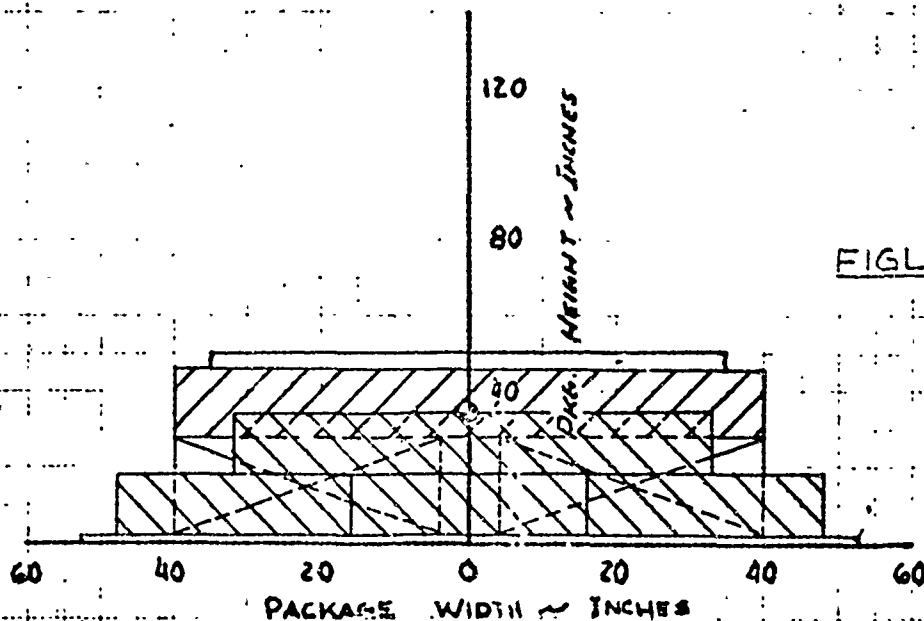


FIGURE B-31

6008
241

PREPARED BY Pemberfor
DATE 8-16-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

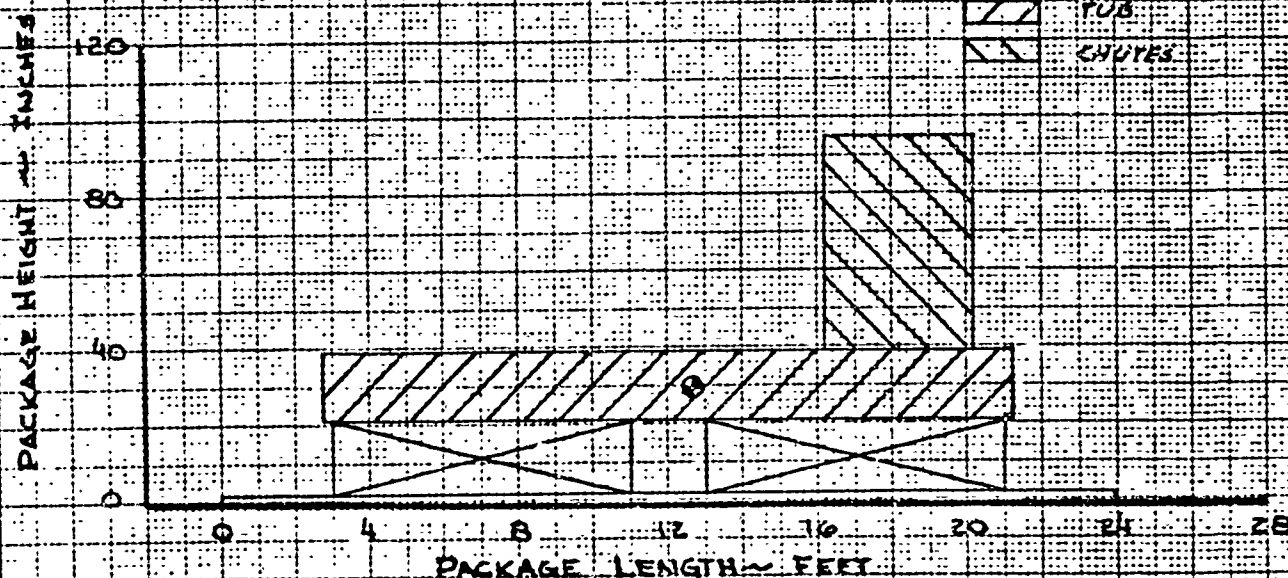
REPORT NO. FR 5473
MODEL C-141A (6008)
PAGE B-36

83
0010
0040
242

AERIAL DELIVERY PACKAGE DATA

FLIGHT 104
DROP 32
PKG. WT. 35,335 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD) A/C &

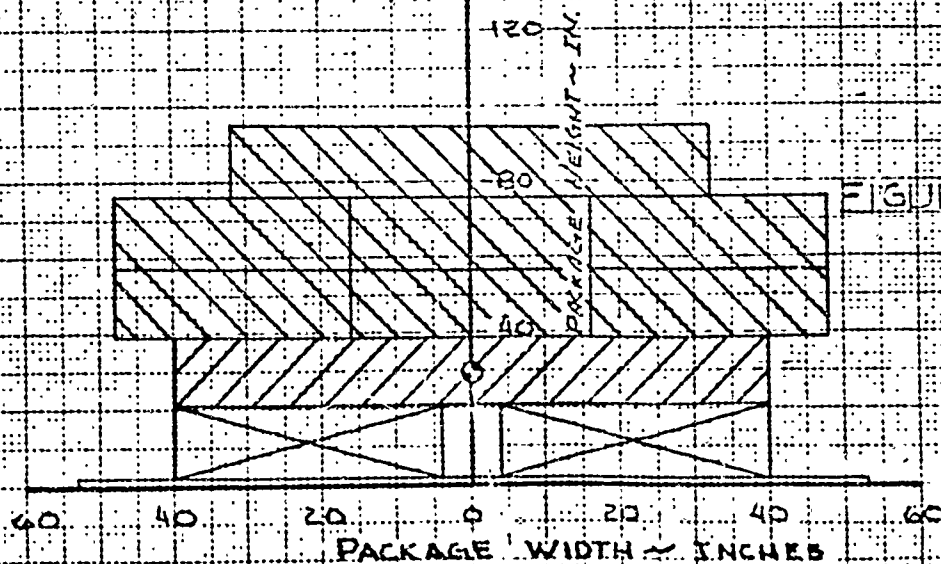


FIGURE 2-32

EO08
242

PREPARED BY Rembert
DATE 12-18-65
CHECKED BY V

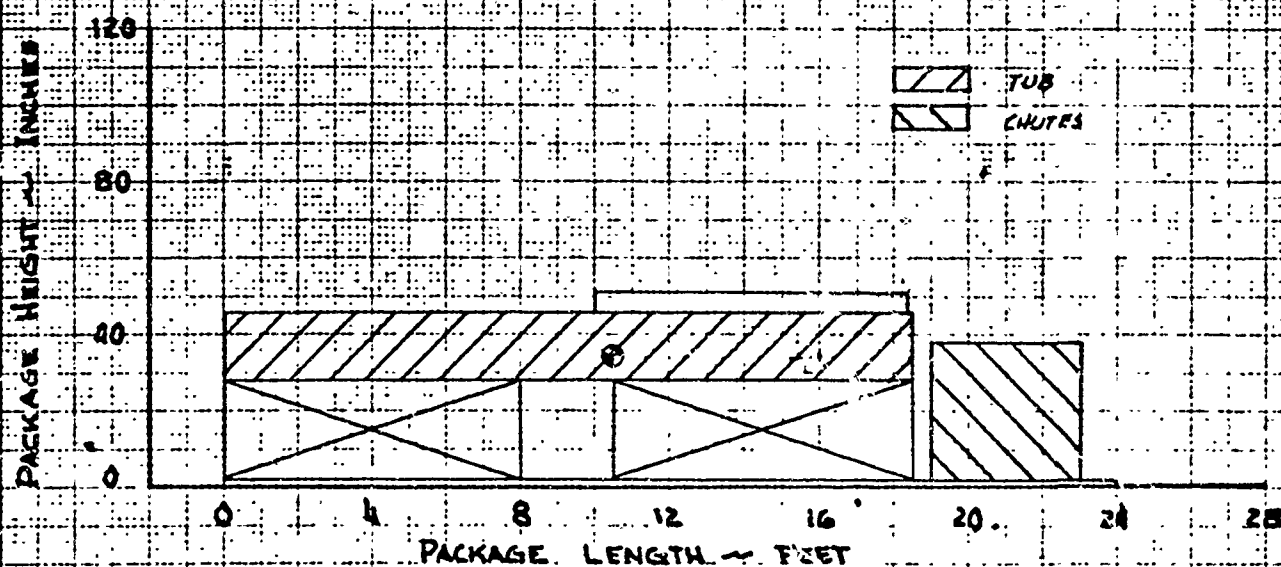
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-37

AERIAL DELIVERY PACKAGE DATA

FLIGHT 190
DROP 33
PKG. WT. 24,760 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

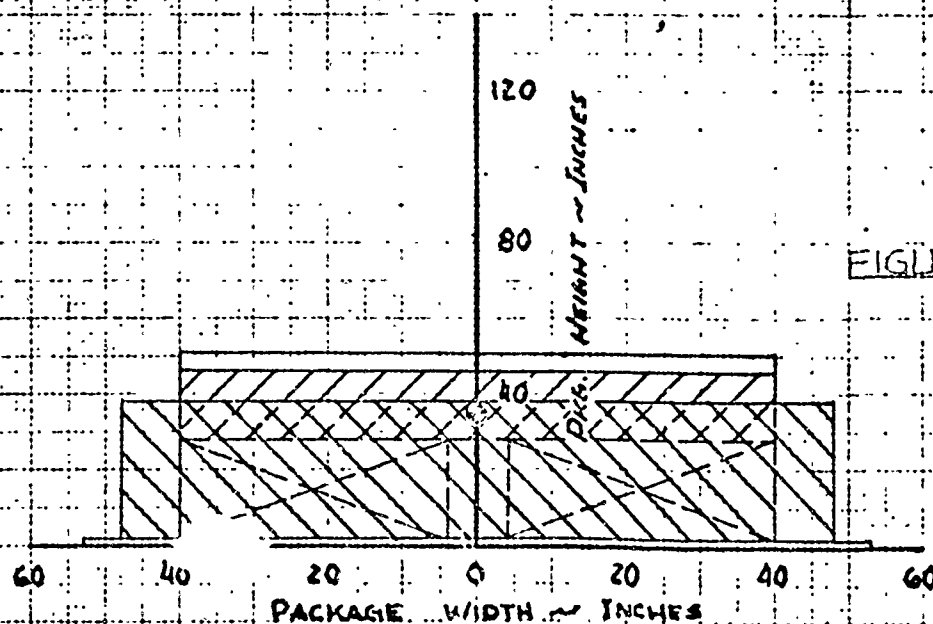


FIGURE B-33

600B
243

PREPARED BY Pemberfun
DATE 8-16-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

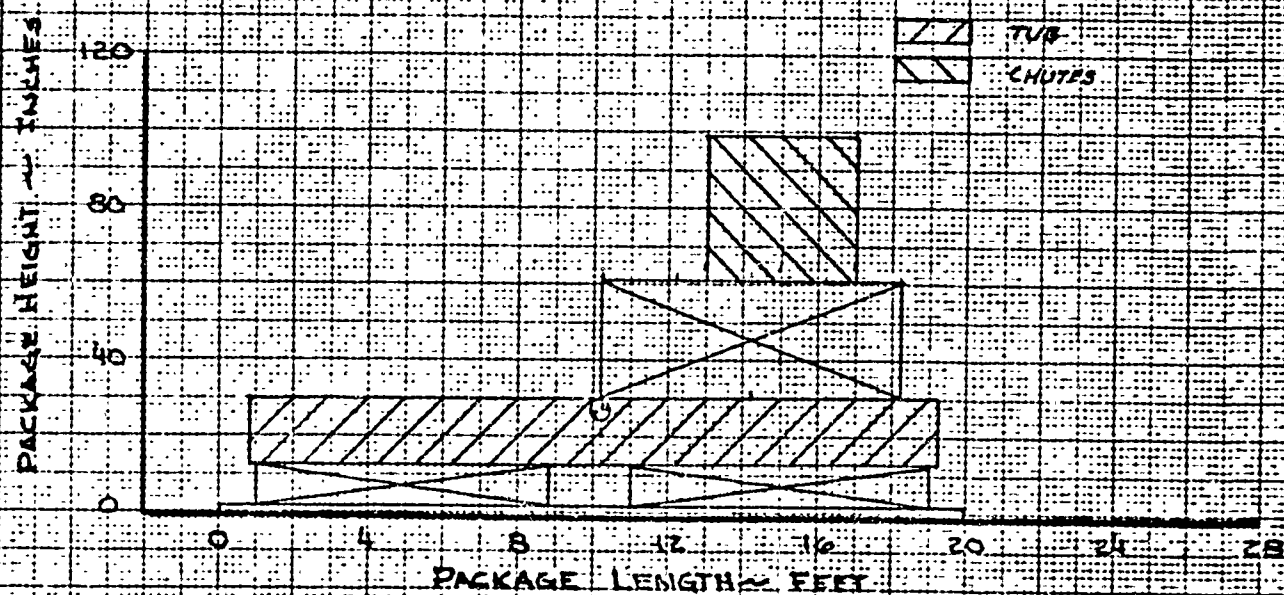
REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-38

6008
244

AERIAL DELIVERY PACKAGE DATA

FLIGHT 136
DROP 34
PKG. WT. 24,830 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C &

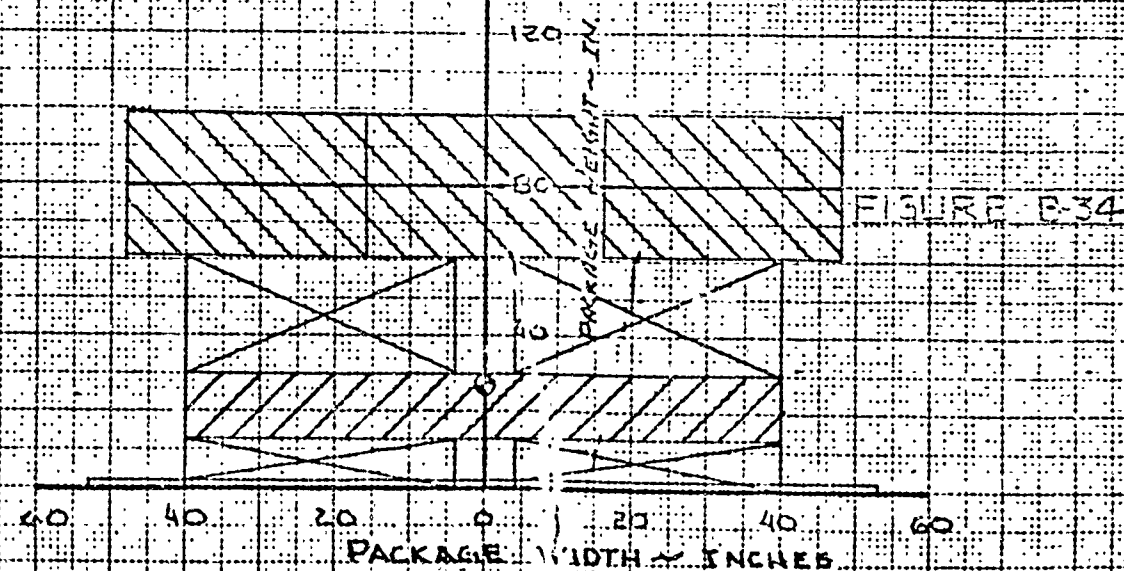


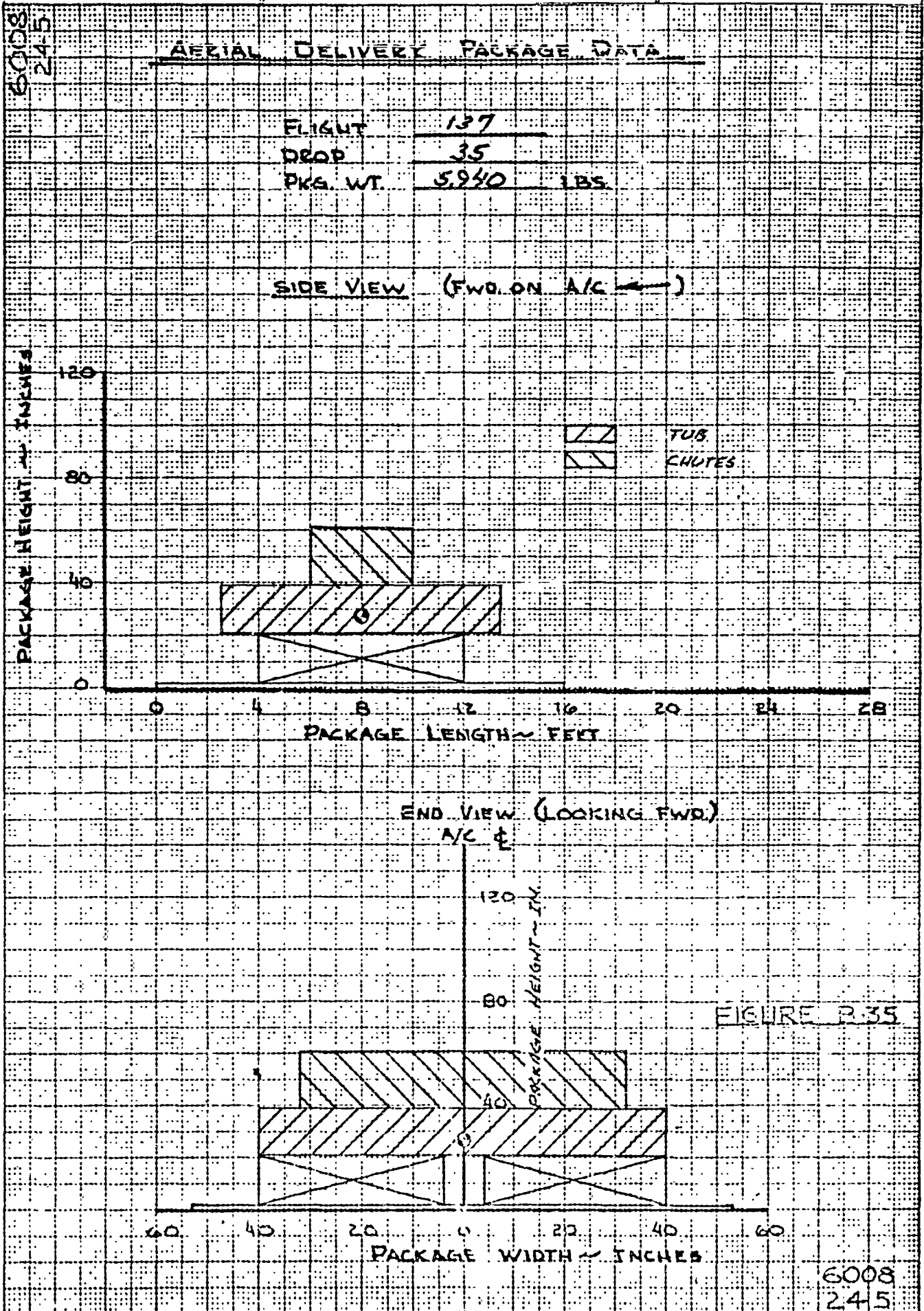
FIGURE B-34

6008
244

PREPARED BY Pemberton
DATE 8-16-65
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LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-39



PREPARED BY Pemberton
DATE 9-23-65
CHECKED BY ✓

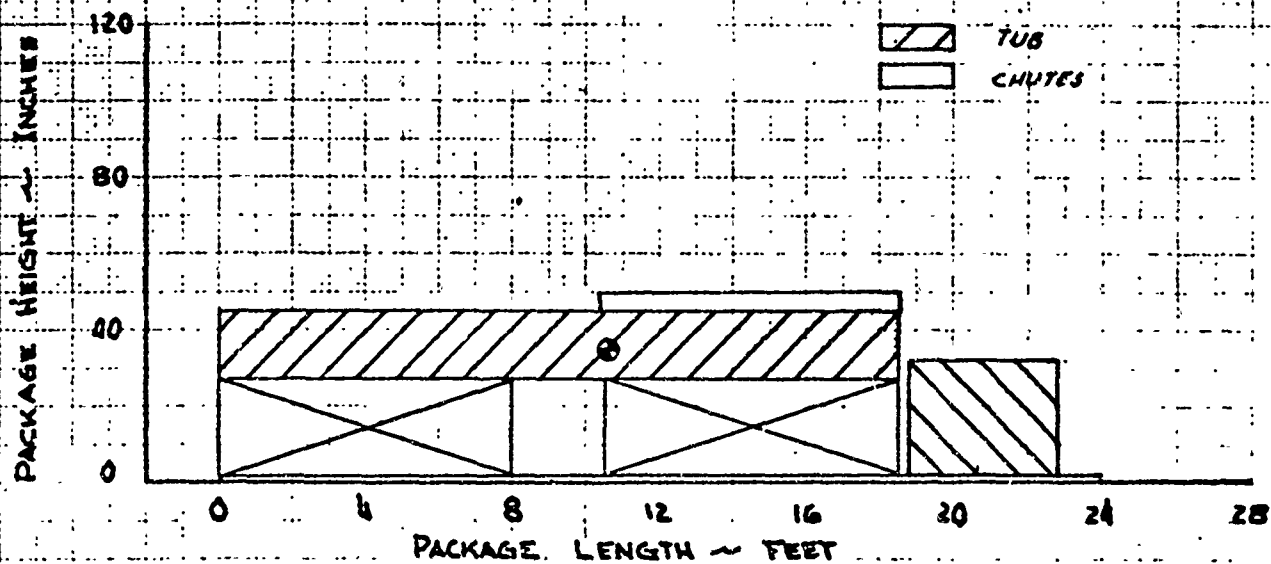
LOCKHEED GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
C-141A (6008)
PAGE B-40

AERIAL DELIVERY PACKAGE DATA

FLIGHT 186
DROP 36
PKG. WT. 24,840 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

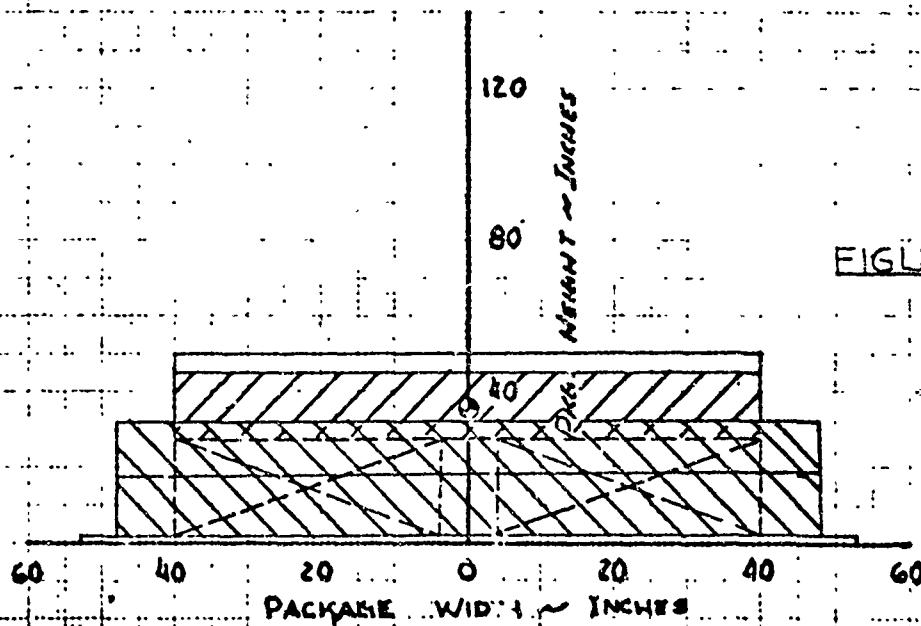


FIGURE B-36

6008
246

PREPARED BY Pemberfor
DATE 8-17-65
CHECKED BY ✓

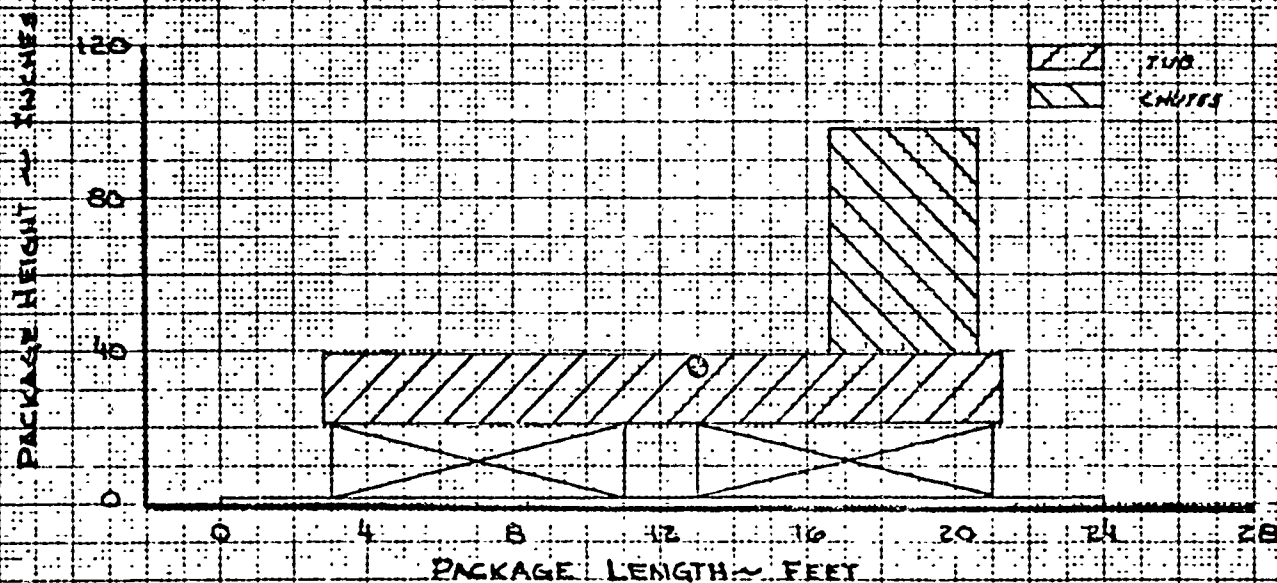
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A (6008)
PAGE B-41

AERIAL DELIVERY PACKAGE DATA

FLIGHT 145
DROP 37-1
PKG. WT. 34,800 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
N/C &

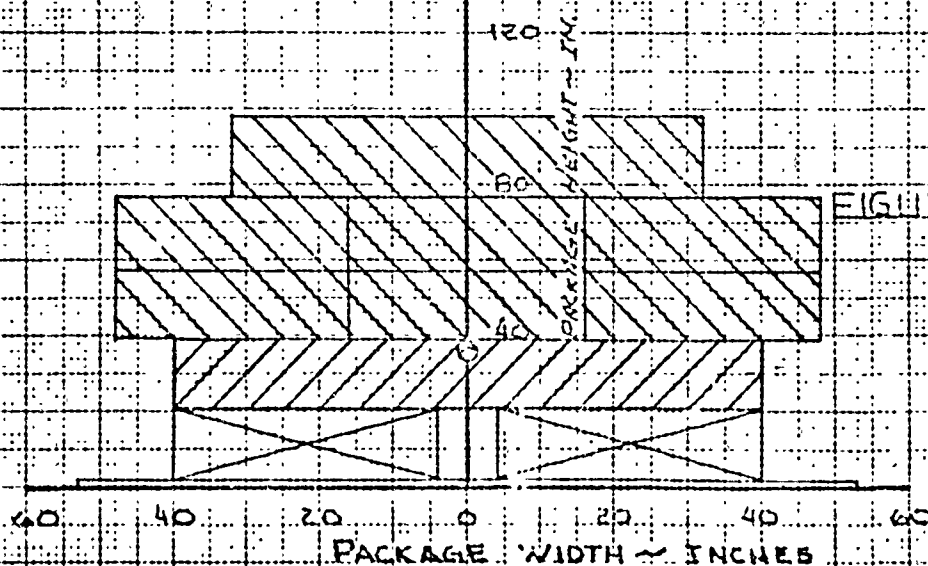


FIGURE B-37A

6008
247

PREPARED BY Pemberton
DATE 8-16-65
CHECKED BY ✓

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

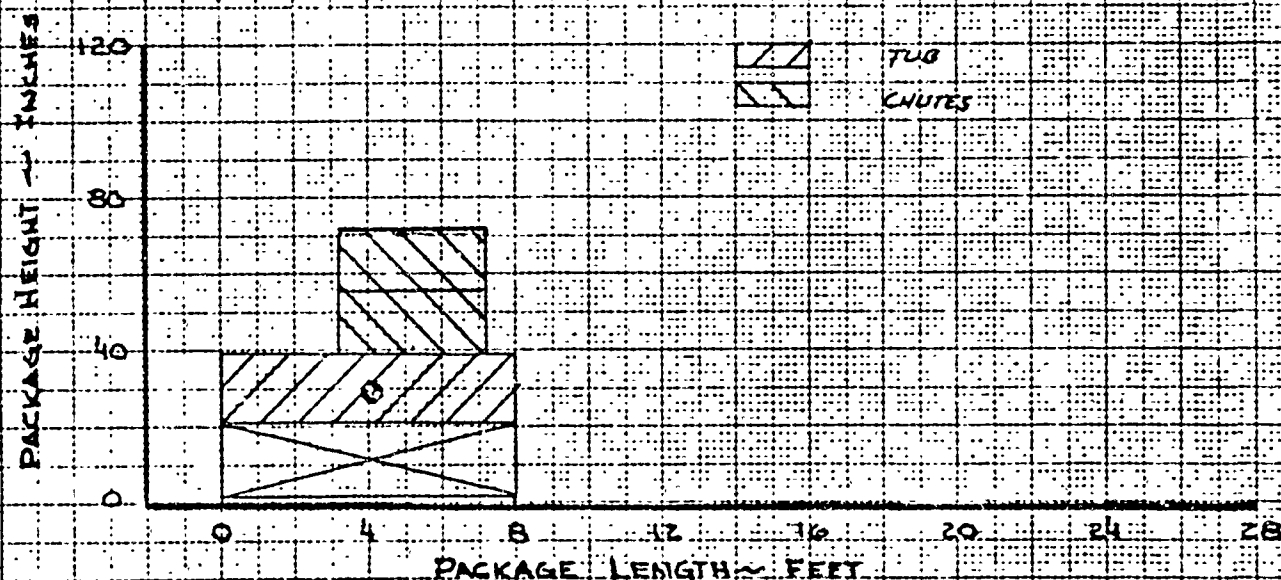
REPORT NO. ER 5473
MODE: C-141A (6008)
PAGE B-42

6008
240

AERIAL DELIVERY PACKAGE DATA

FLIGHT 145
DROP 37-2
PKG. WT. 9,450 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ↓

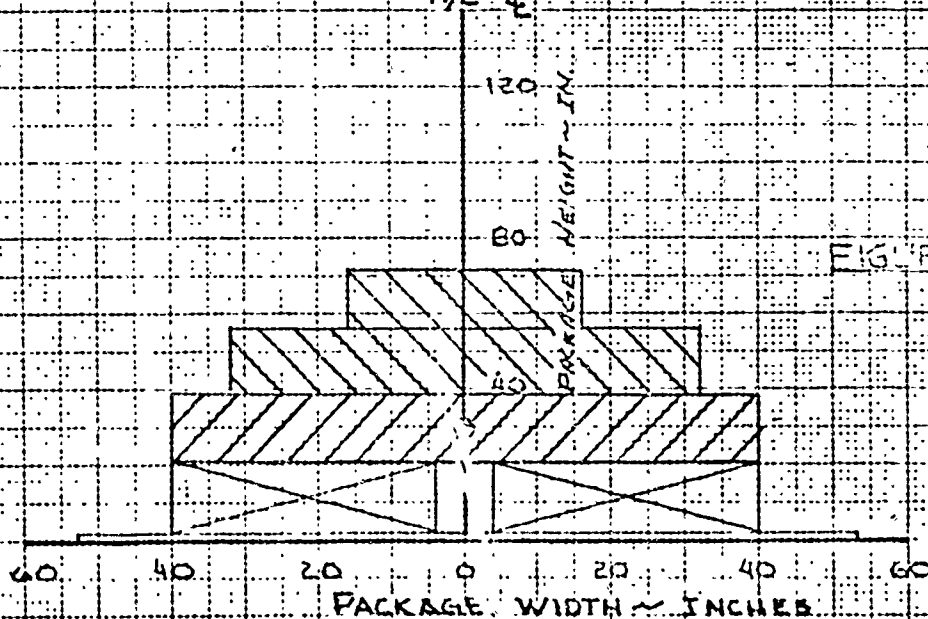


FIGURE B-37B

6008
240

PREPARED BY Pemberton
 DATE 8-17-65
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 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

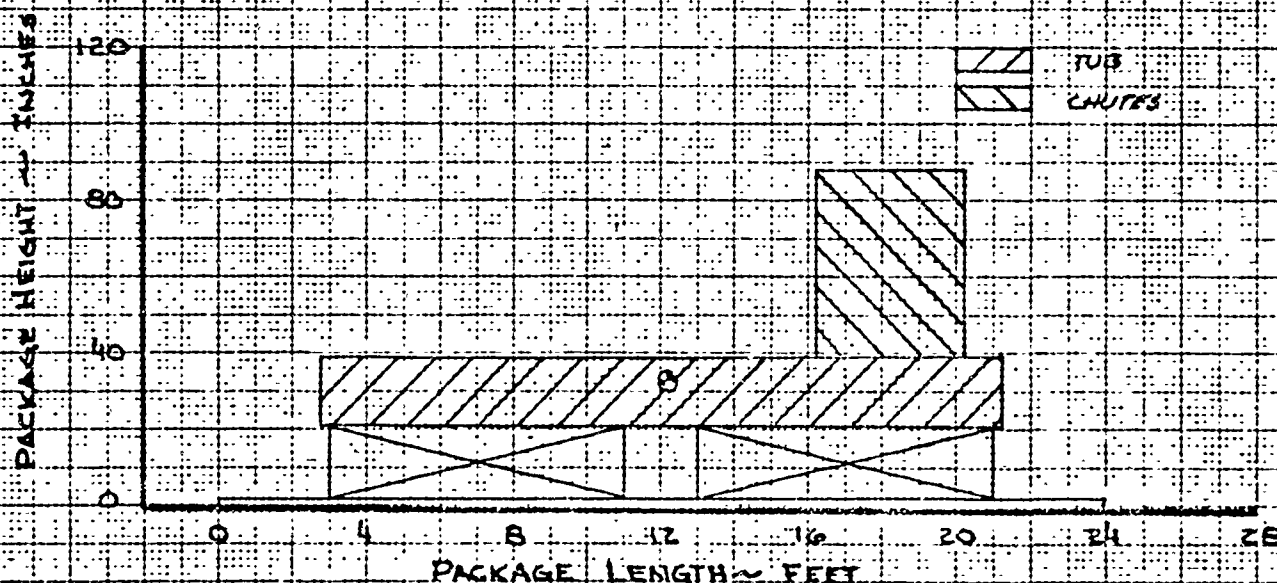
REPORT NO ER 5473
 MODEL C-141A (6008)
 PAGE B-43

6008
249

AERIAL DELIVERY PACKAGE DATA

FLIGHT 146
 DROP 38-1
 PKG. WT. 34,900 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ⊙

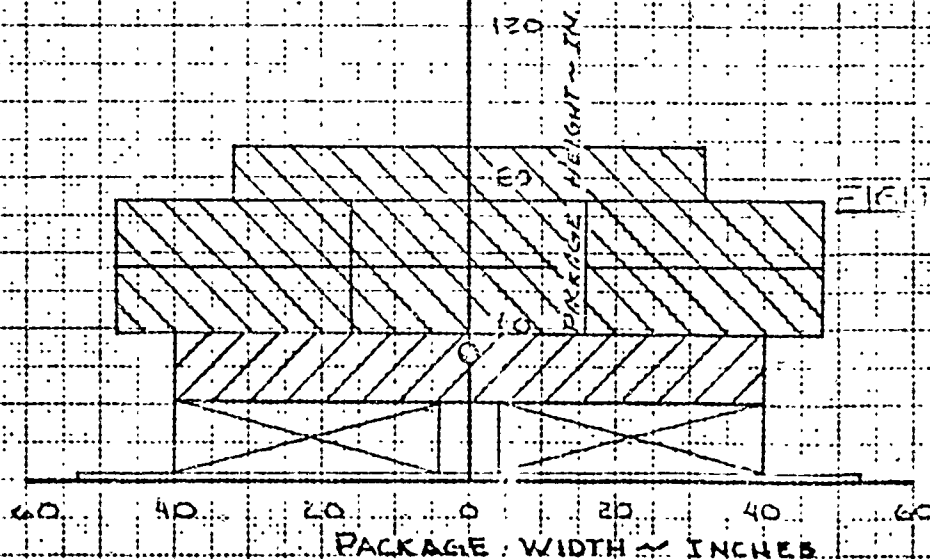


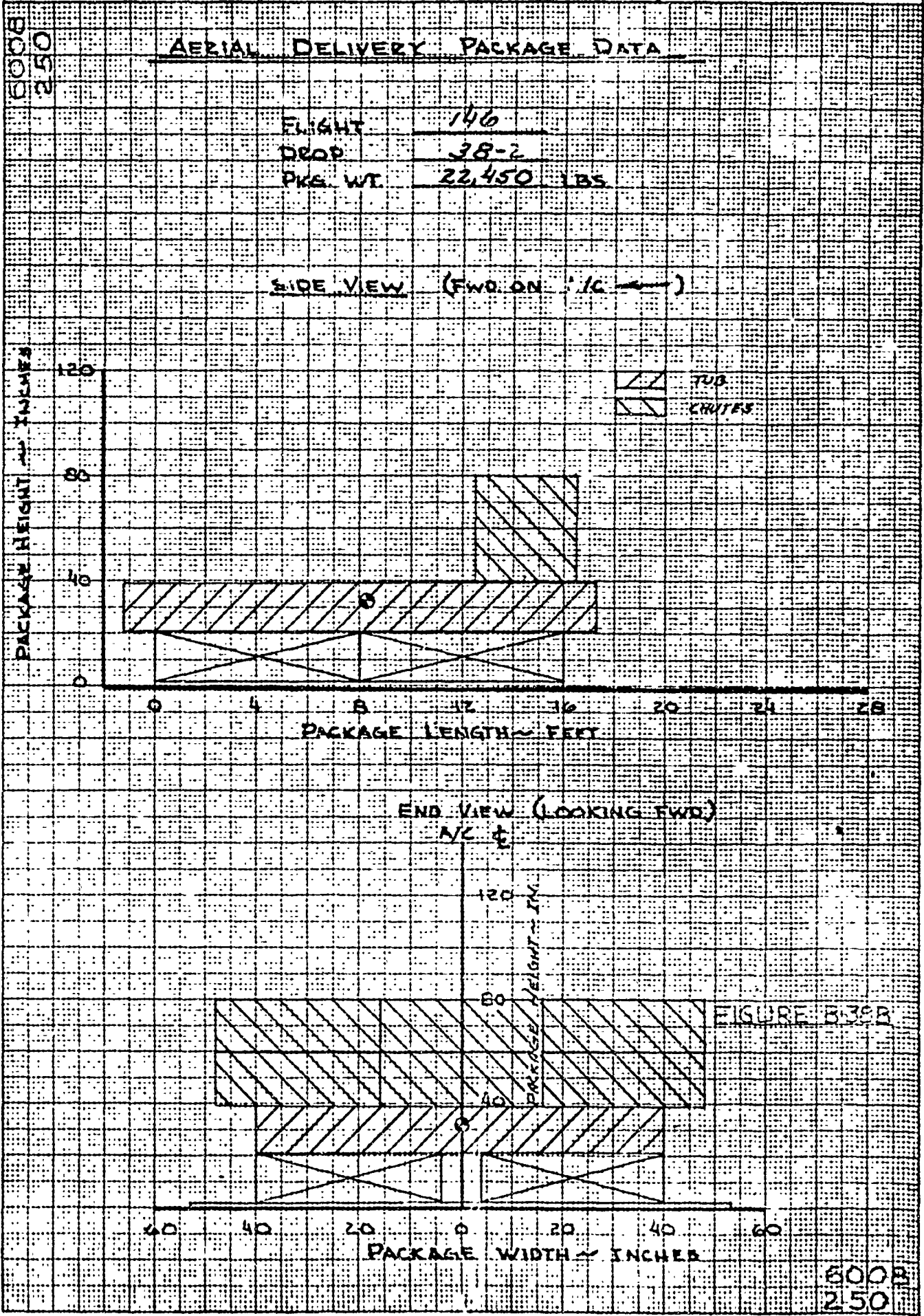
FIGURE B-32A

6008
249

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DATE 8-17-65
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REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-44



PREPARED BY Pemberton
DATE 8-17-65
CHECKED BY _____

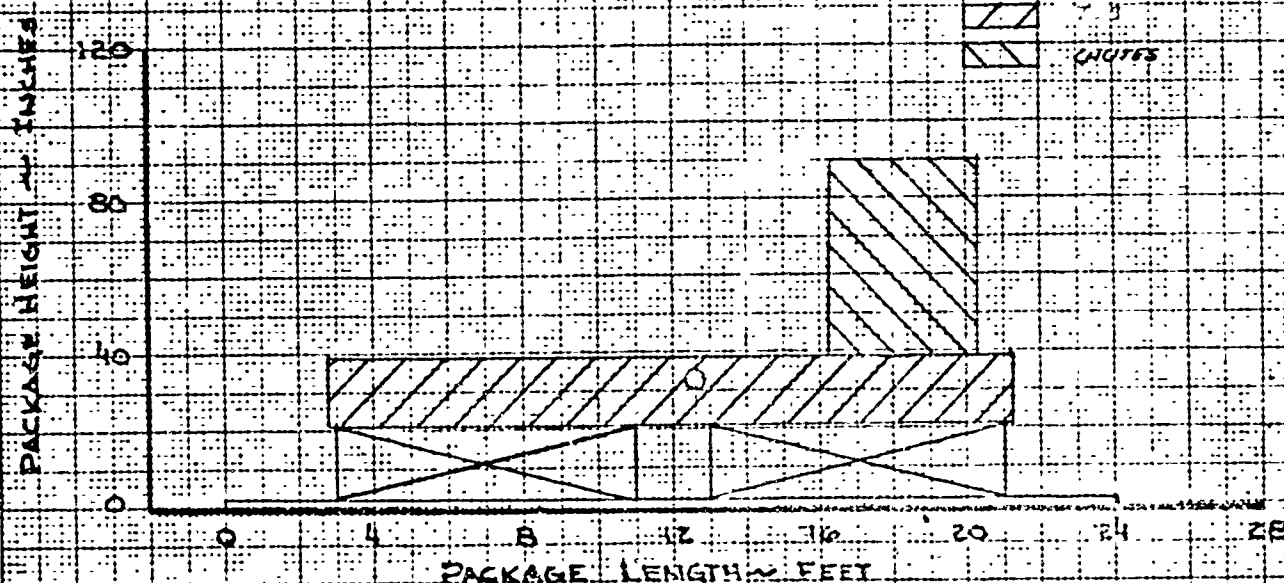
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-45

AERIAL DELIVERY PACKAGE DATA

FLIGHT 118
DROP 39
PKG. WT. 35,030 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
A/C

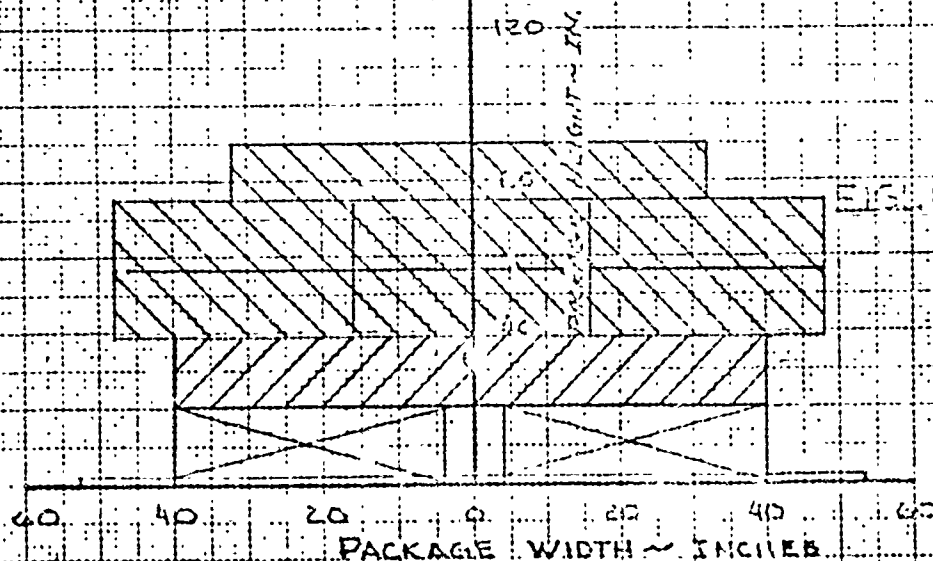


FIGURE B-39A

PREPARED BY Pemberton
DATE 8-17-65
CHECKED BY ✓

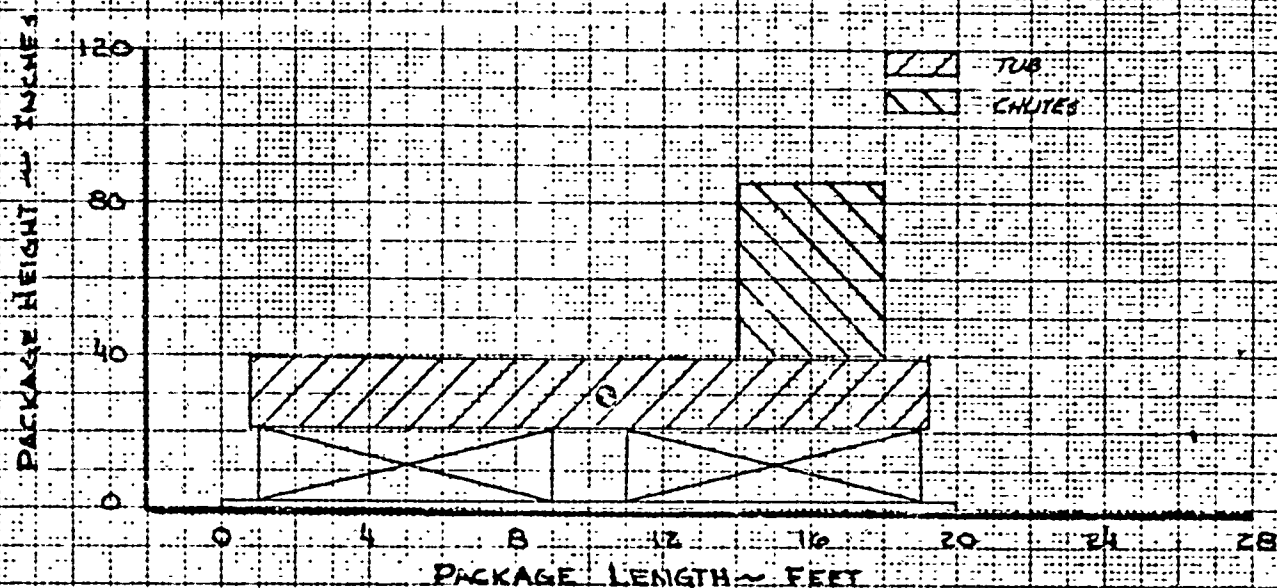
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (60009)
PAGE B 46

AIRIAL DELIVERY PACKAGE DATA

FLIGHT 148
DROP 39-2
PKG. WT. 29,600 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ↓

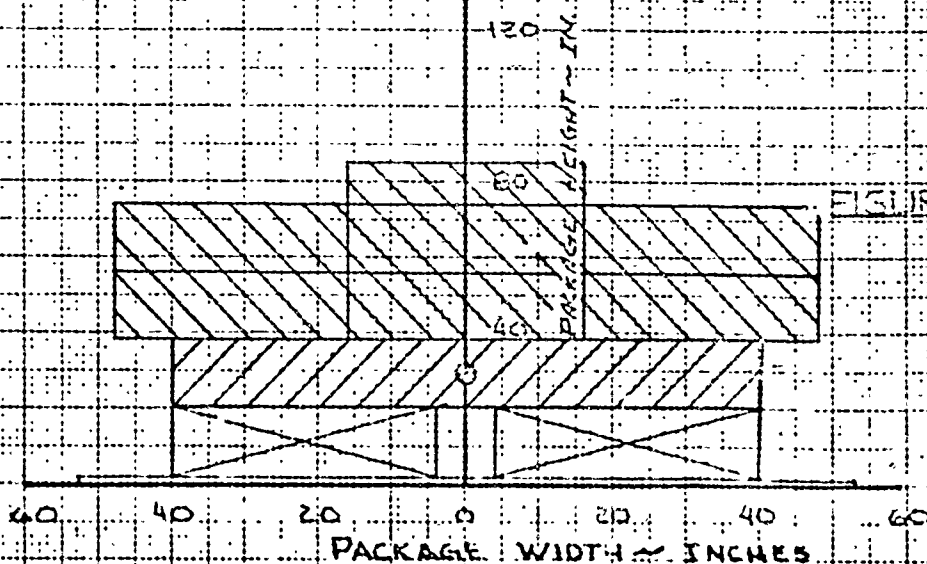


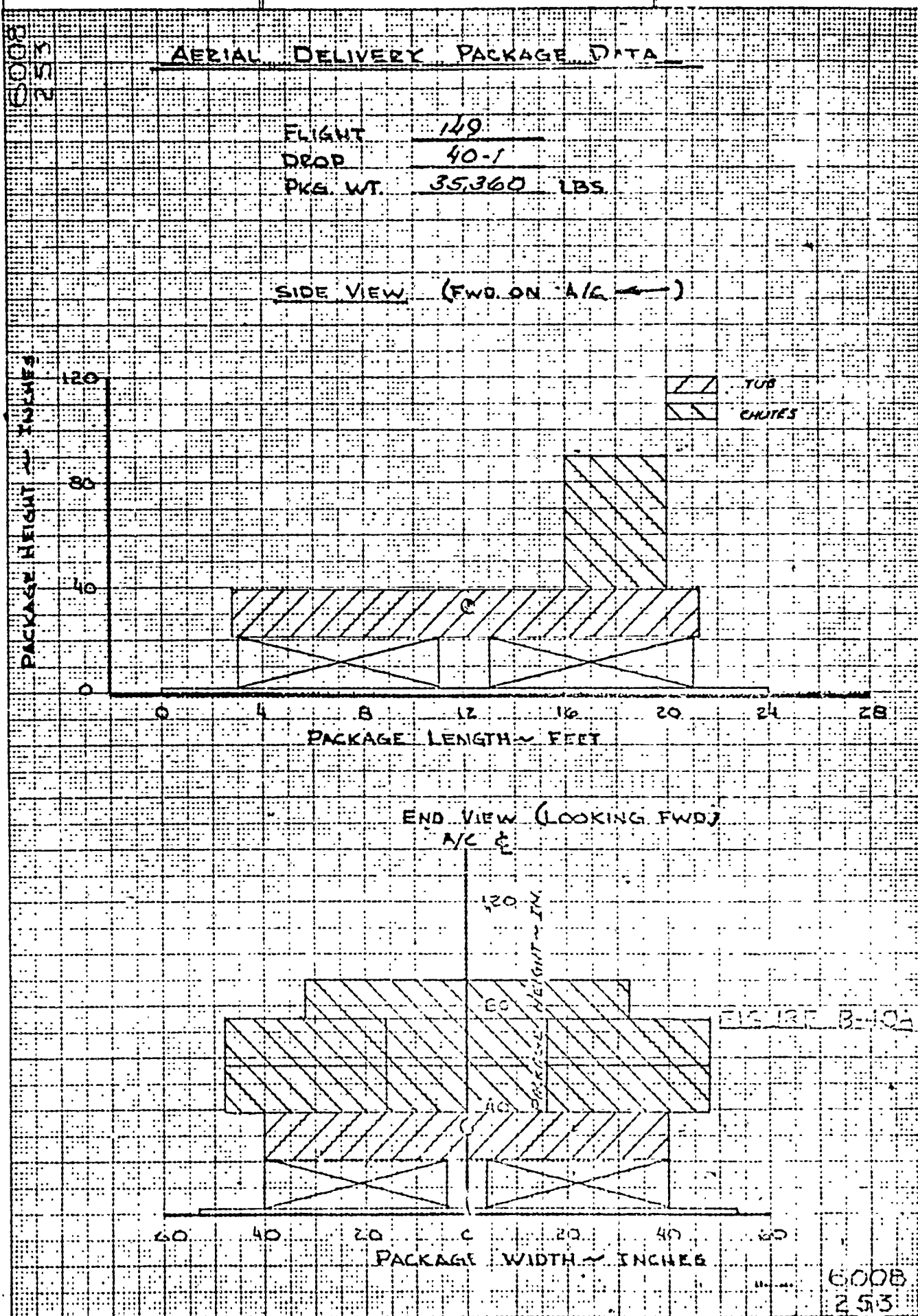
FIGURE B-355

6008
252

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DATE 8-18-65
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REPORT NO. ER 5473
MODEL C-141A (6008)
PAGE B-47



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CHECKED BY ✓

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

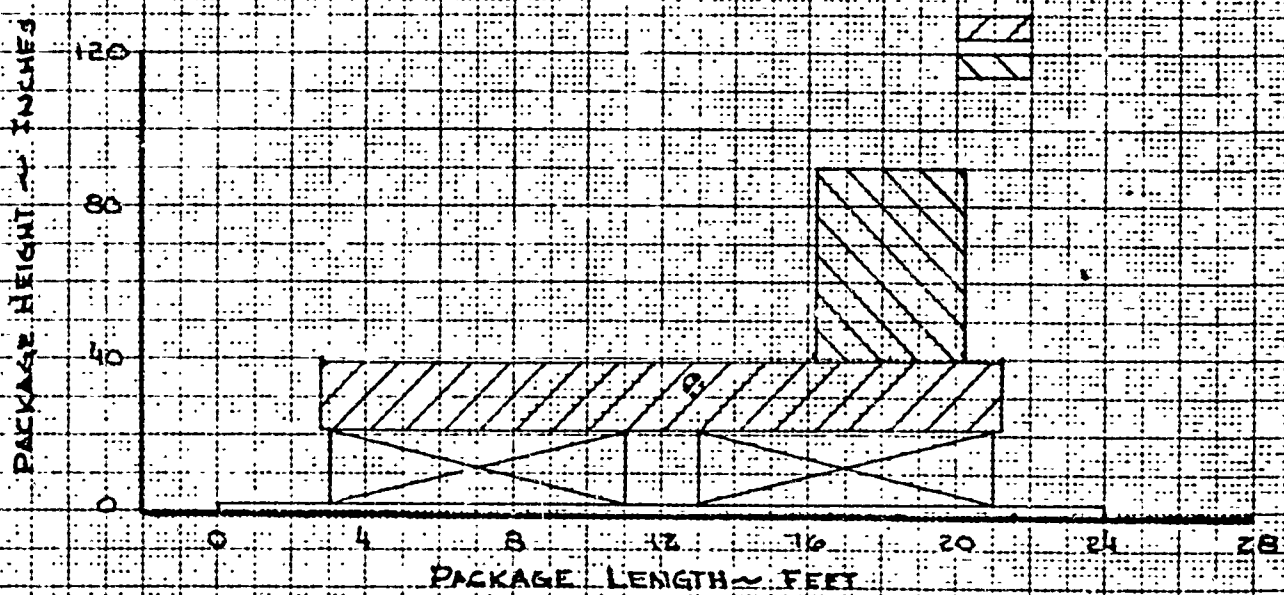
REPORT NO. ER 5473
MODEL C-41A (600B)
PAGE B-48

600B
254

AERIAL DELIVERY PACKAGE DATA

FLIGHT 149
DEOP 40-2
PKG. WT. 34,650 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD)
A/C Φ

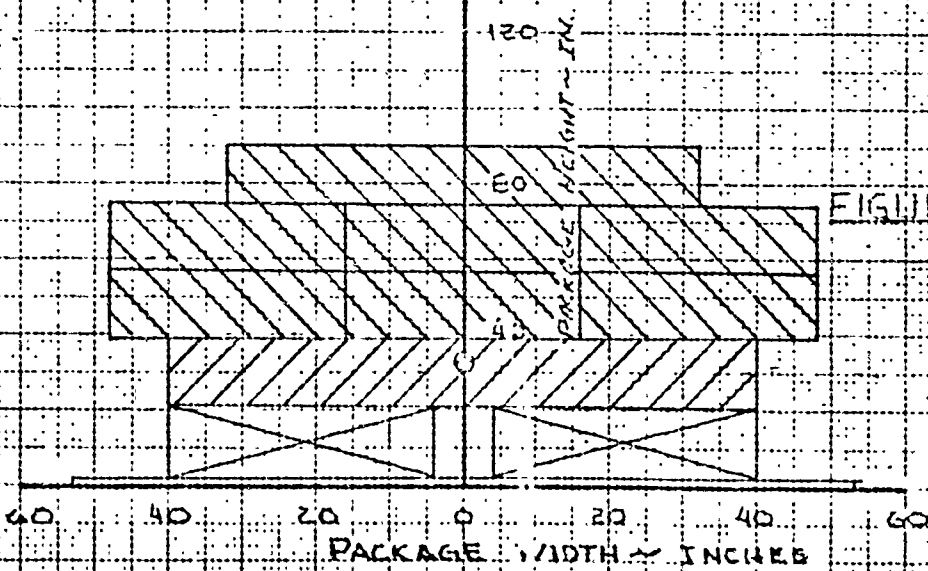


FIGURE B-40B

600B
254

PREPARED BY *Pemberfor*

DATE *9-3-65*

CHECKED BY

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. *ER 5473*

MODEL *C-141A (6008)*

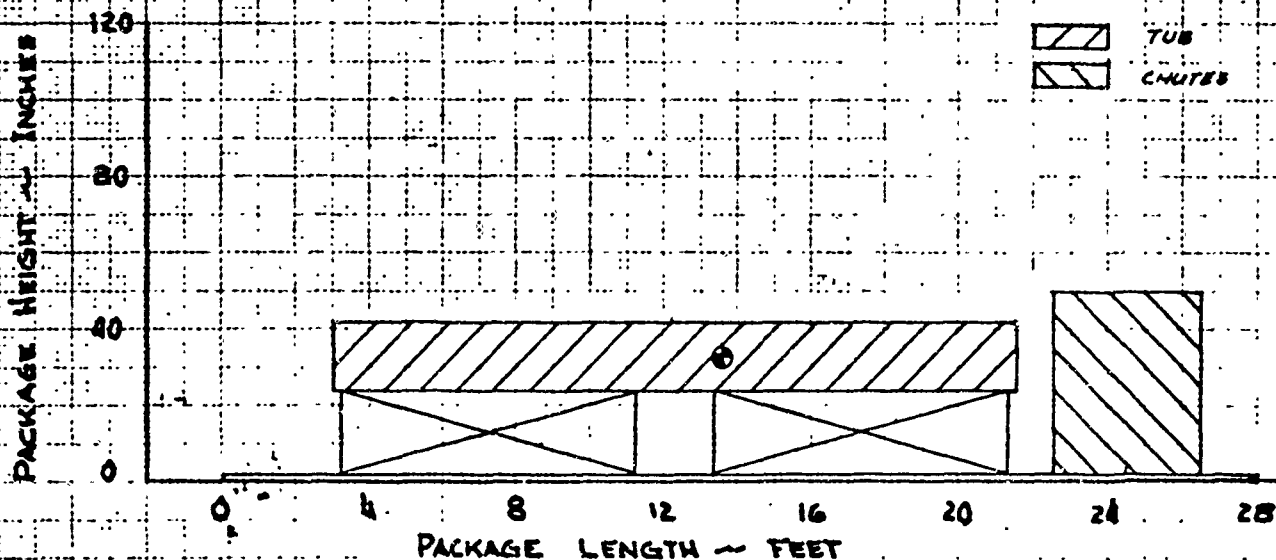
PAGE *B-49*

6008
255

AERIAL DELIVERY PACKAGE DATA

FLIGHT *175*
DROP *40-1 R*
PKG. WT. *35,390* LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

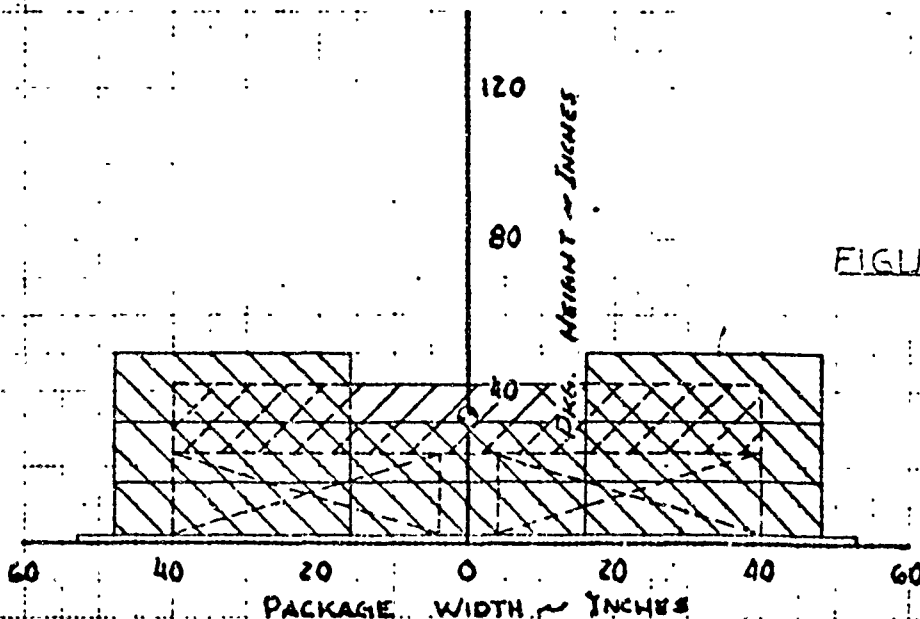


FIGURE B-40AR

6008
255

PREPARED BY Pambarfor
DATE 9-3-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

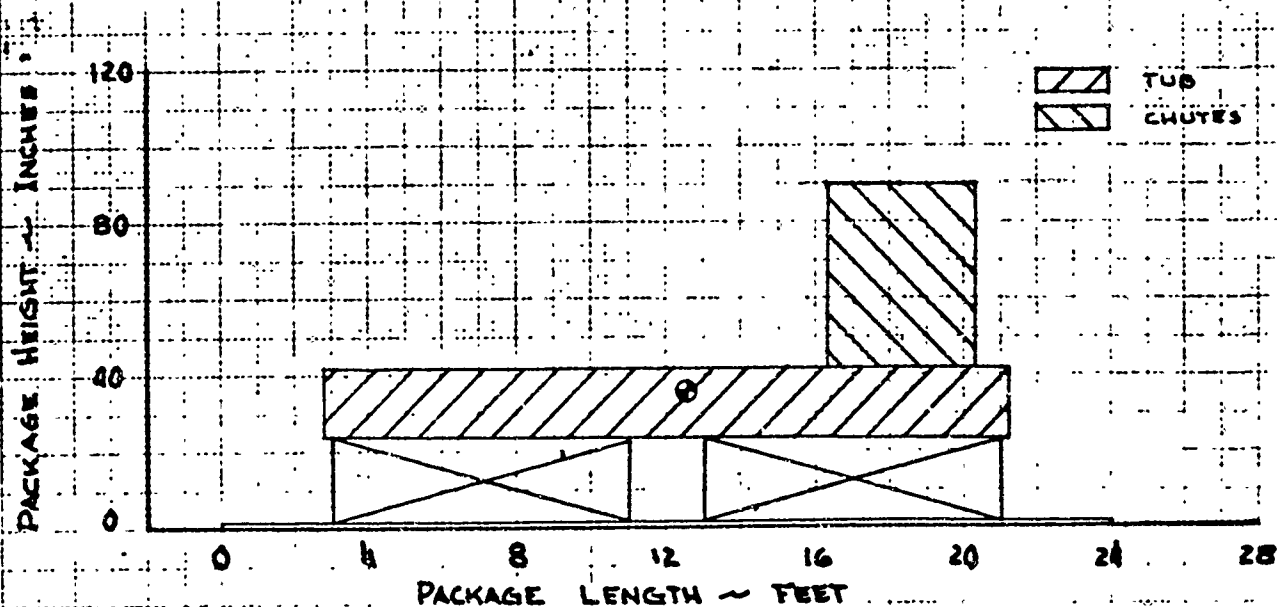
REPORT NO. ER 5473
MODEL C-41A (6008)
PAGE B-50

6008
256

AERIAL DELIVERY PACKAGE DATA

FLIGHT 175
DROP 40-2R
PKG. WT. 35,040 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

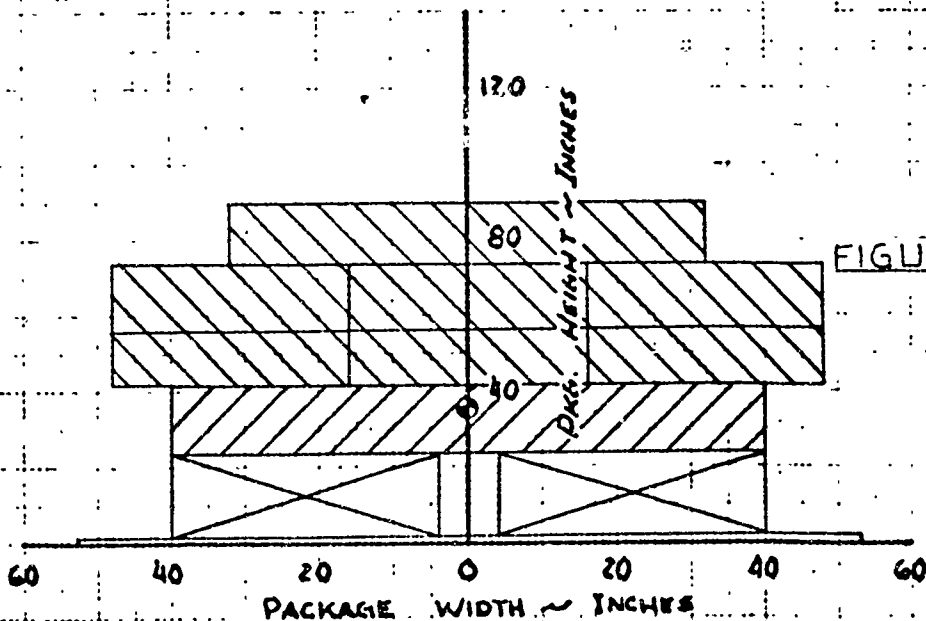


FIGURE B-40BR

6008
256

PREPARED BY Zemberton
DATE 9-18-65
CHECKED BY ✓

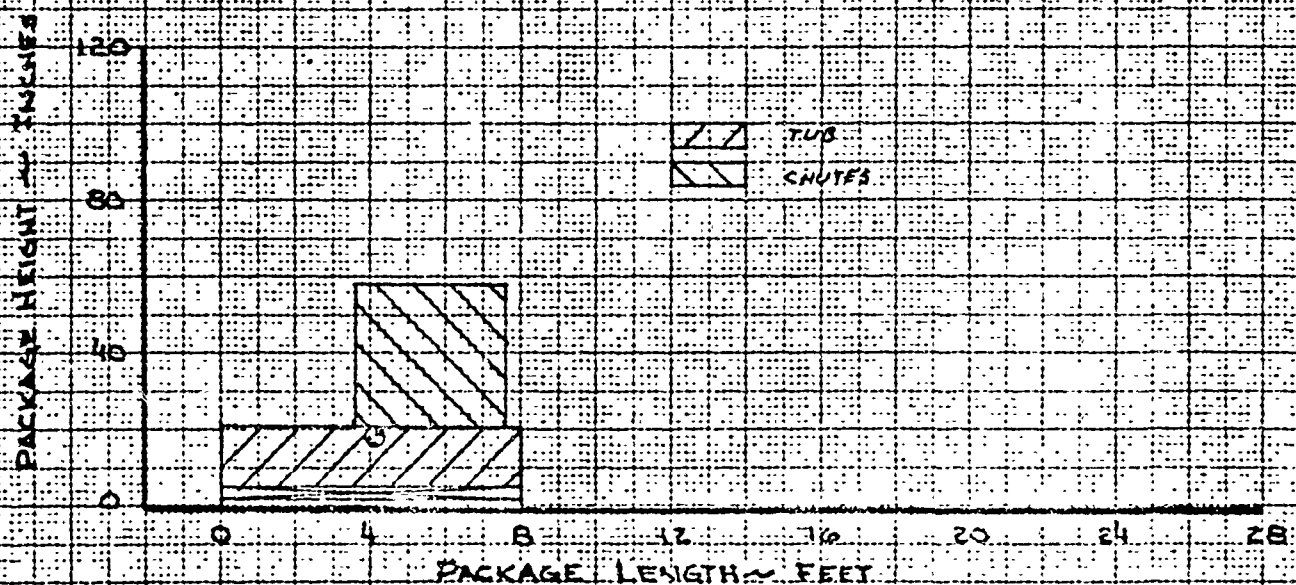
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-51

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-1
PKG. WT. 9,750 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD) A/C →

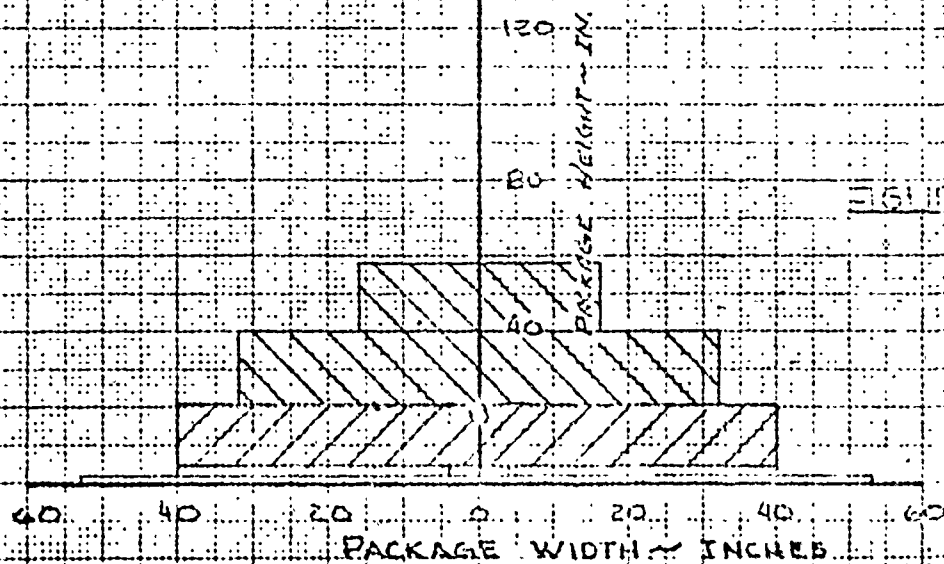


FIGURE P-41A

600B
257

PREPARED BY Pemberton
DATE 8-19-65
CHECKED BY V

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

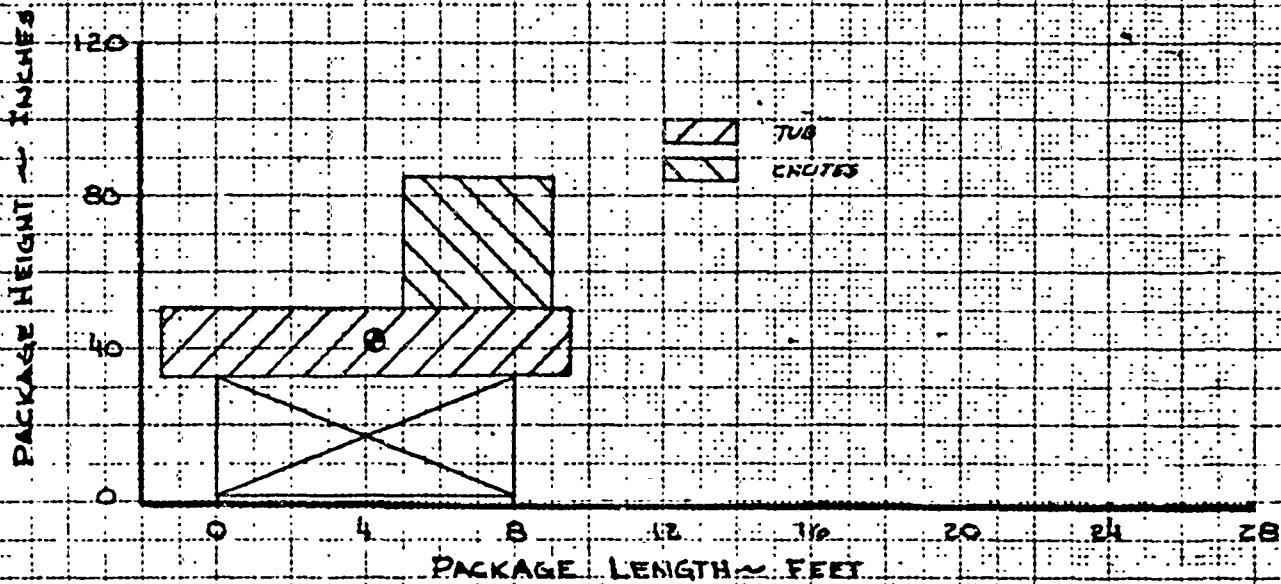
REPORT NO. ER-5473
MODEL C-141A (600B)
PAGE B-52

600B
25B

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-2
PKG. WT. 10,130 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

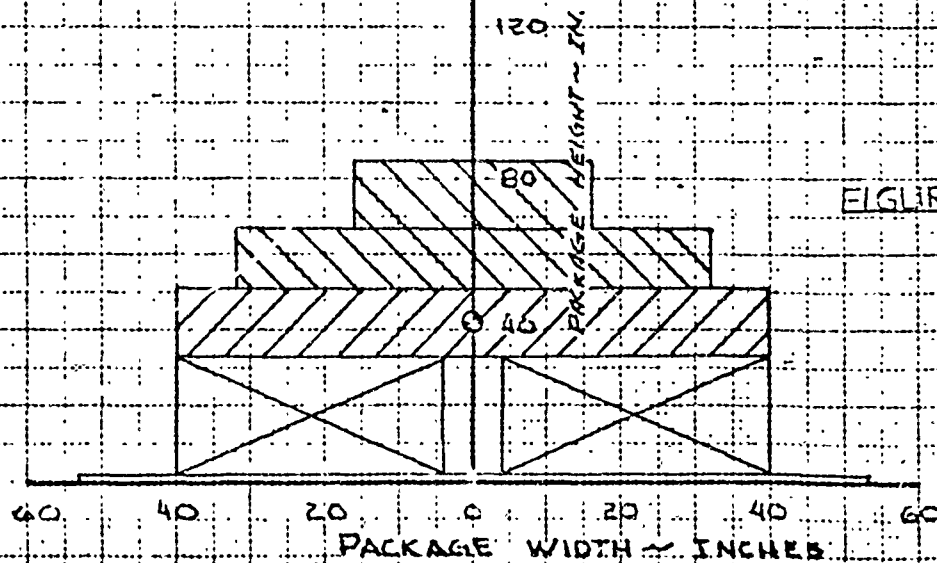


FIGURE P-41B

600B
25B

PREPARED BY *P. Amberton*
DATE *8-19-65*
CHECKED BY

LOCKHEED GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT CORPORATION

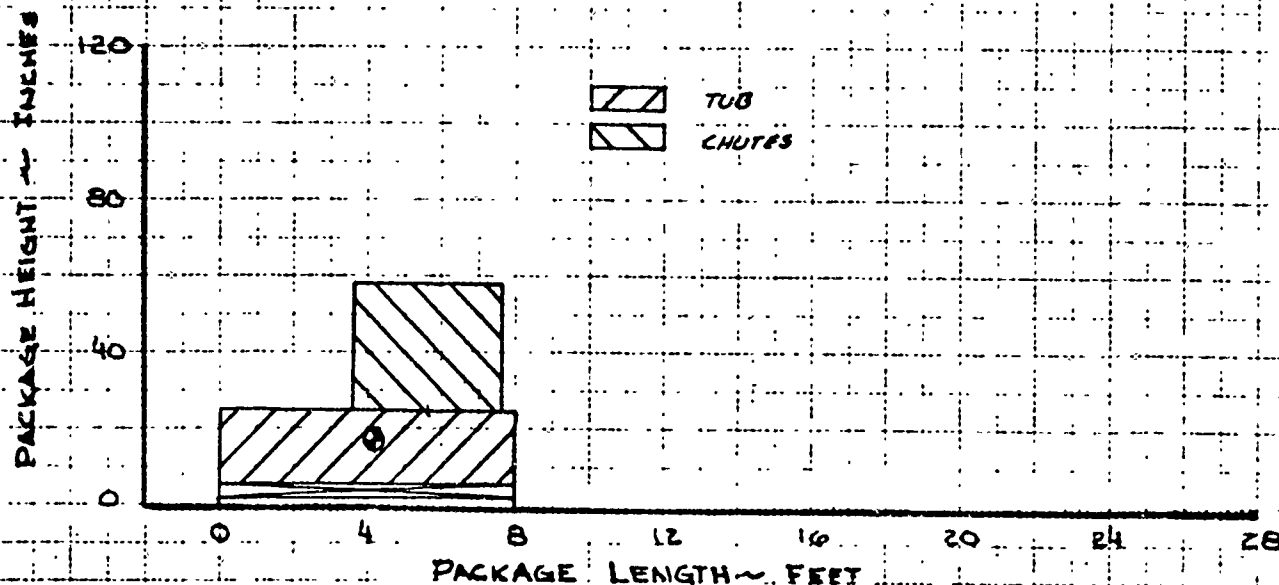
REPORT NO. ER 5473
MODEL *C-41A (6008)*
PAGE B-53

6008
259

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-3
PKG. WT. 10,350 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

A/C \oplus

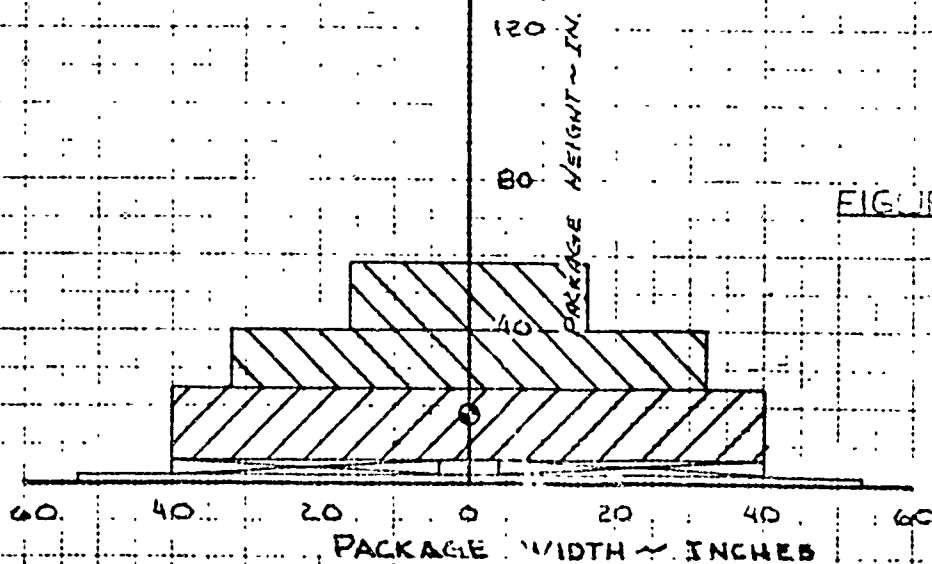


FIGURE B-41C

6008
259

PREPARED BY Pamberger
DATE 8-19-68
CHECKED BY ✓

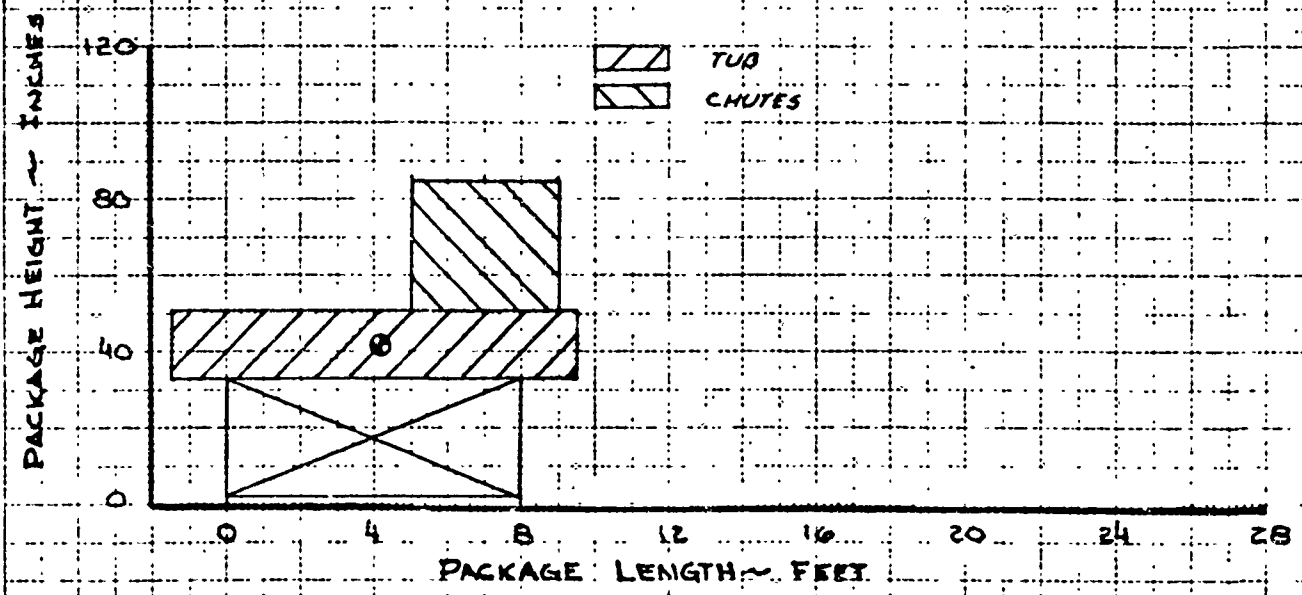
LOCKHEED GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT COMPANY

REPORT NO. ER 5473
MODEL C-41A (6008)
PAGE B-54

AERIAL DELIVERY PACKAGE DATA

FLIGHT 150
DROP 41-4
PKG. WT. 9,950 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ←

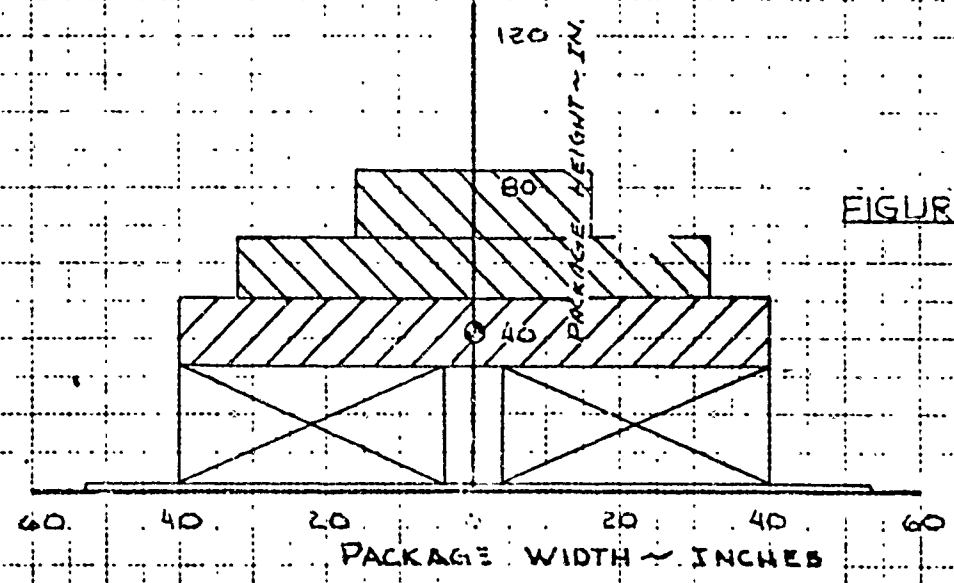


FIGURE B-4D

6008
260

PREPARED BY Pemberlon
DATE 8-20-65
CHECKED BY _____

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

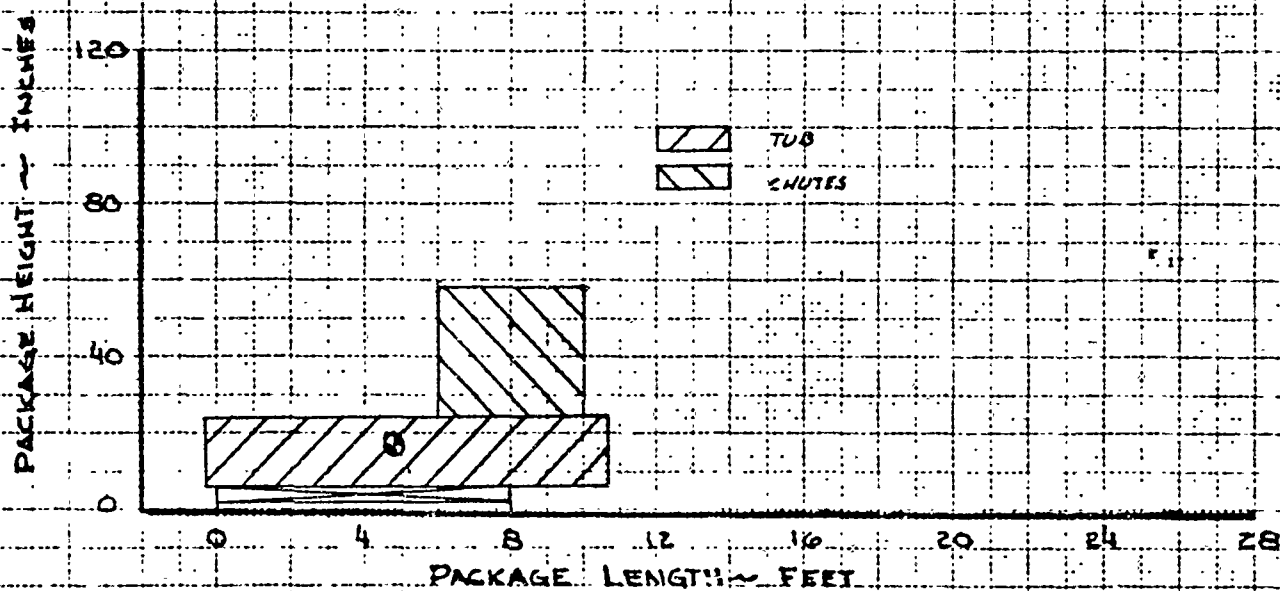
REPORT NO. ER 5473
MODEL C-41A (6008)
PAGE R-55

6008
261

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42-1
PKG. WT. 10,150 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ⊥

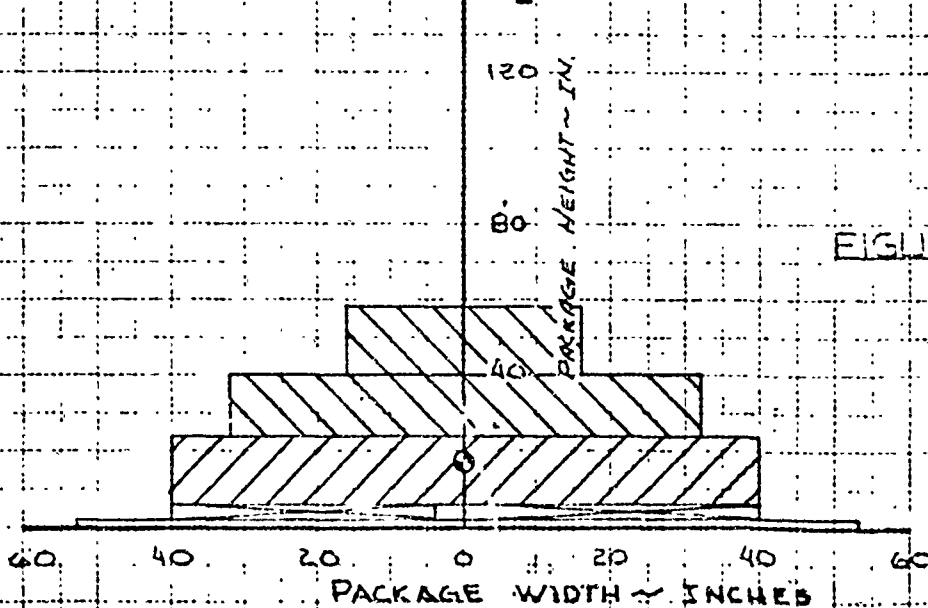


FIGURE R-42A

6008
261

PREPARED BY *Pemberton*
 DATE *8-20-65*
 CHECKED BY _____

LOCKHEED GEORGIA COMPANY
 100 N. FLEMING AVE. FORT LANE, GA. 30215

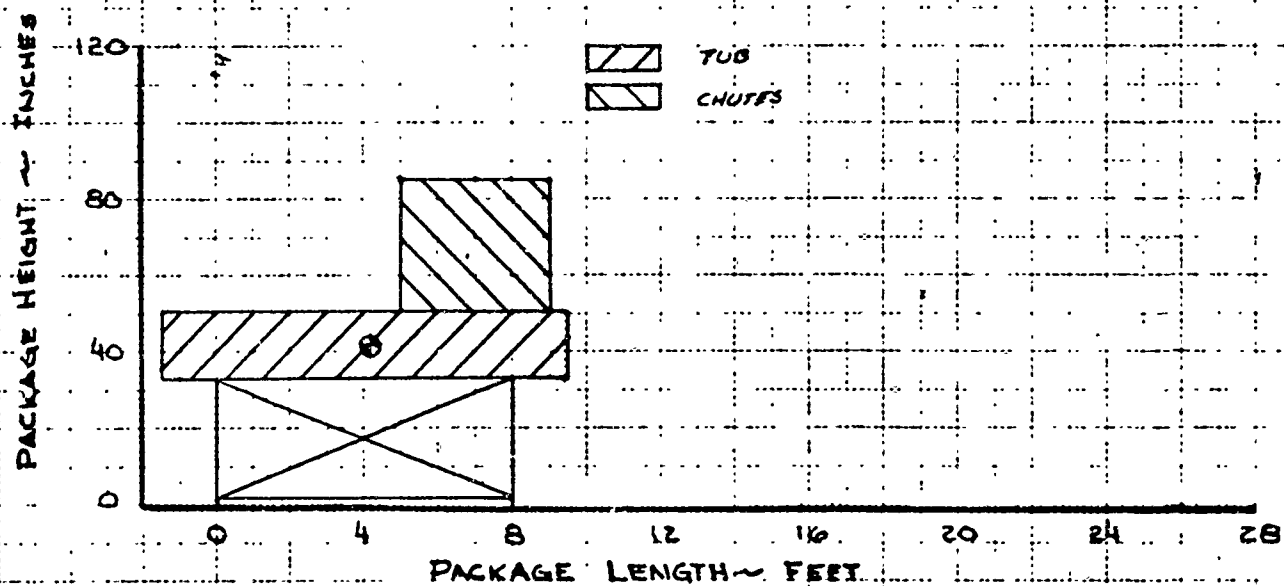
REPORT NO. *ER 5473*
 MODEL *C-41A (6008)*
 PAGE *B-56*

6008
262

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
 DROP 42-2
 PKG. WT. 10,490 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)

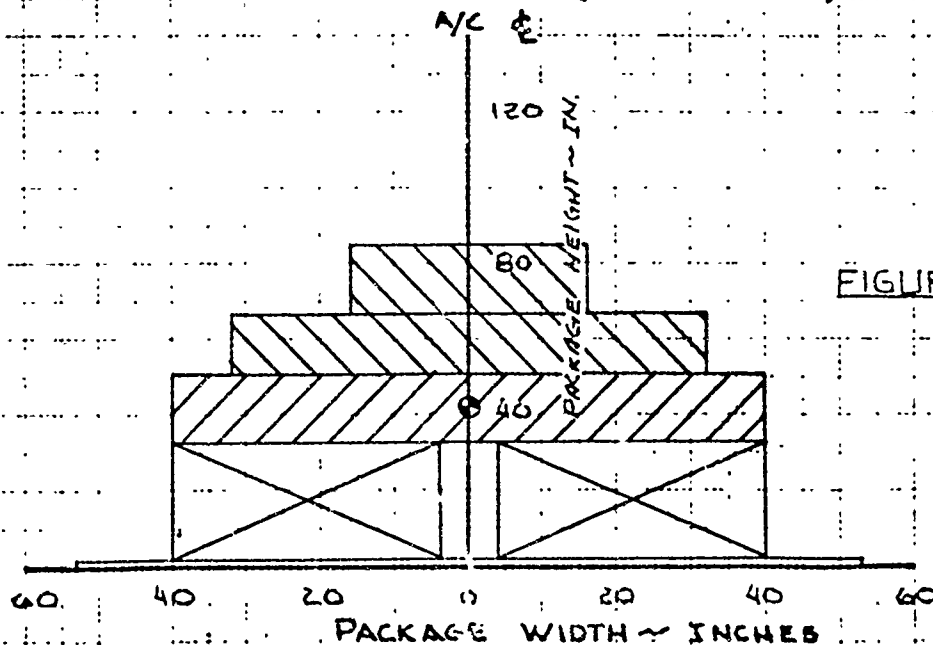


FIGURE B-42B

6008
262

PREPARED BY *Pamberfon*
DATE *8-20-65*
CHECKED BY

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

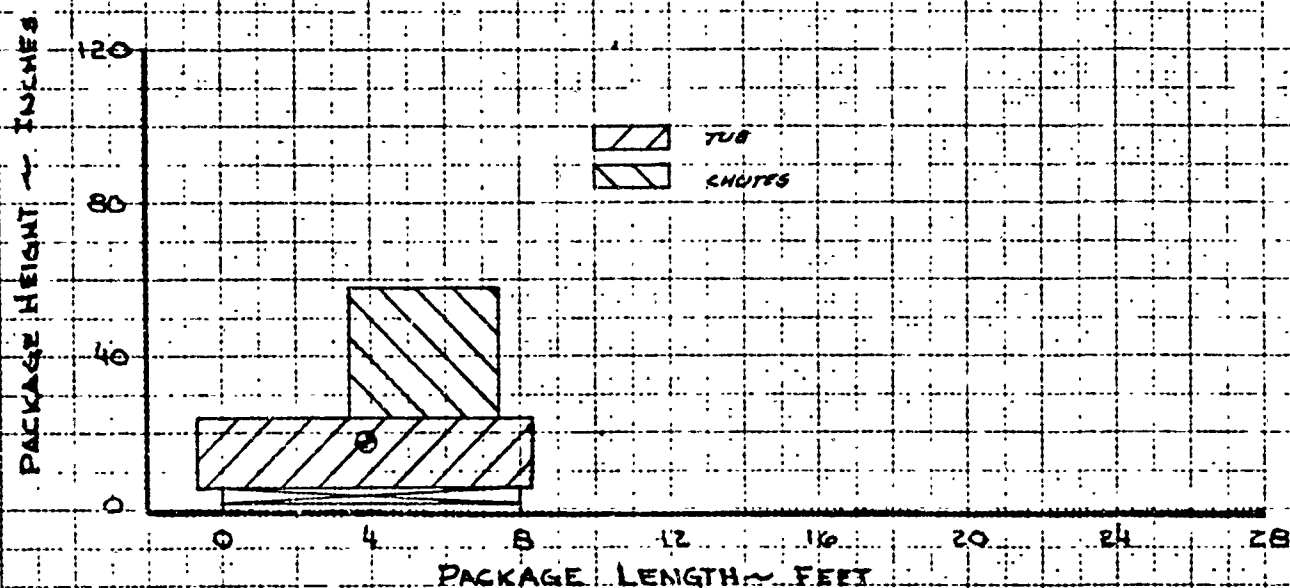
REPORT NO ER 5473
MODEL *C-141A (6008)*
PAGE *B-57*

6008
263

AERIAL DELIVERY PACKAGE DATA

FLIGHT *151*
DROP *42-3*
PKG. WT. *10,210* LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C →

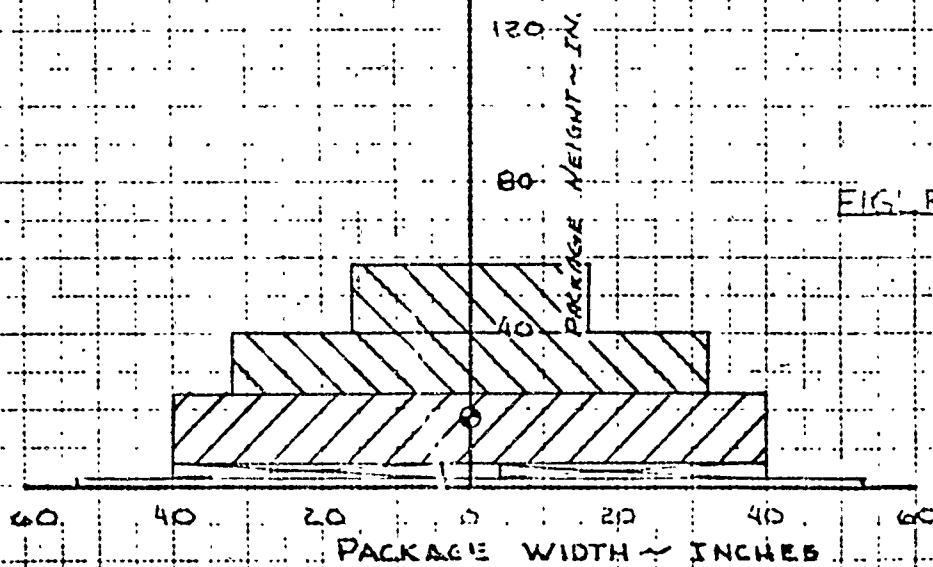


FIG. RE B-42C

6008
263

PREPARED BY Pemberton
DATE 8-20-65
CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

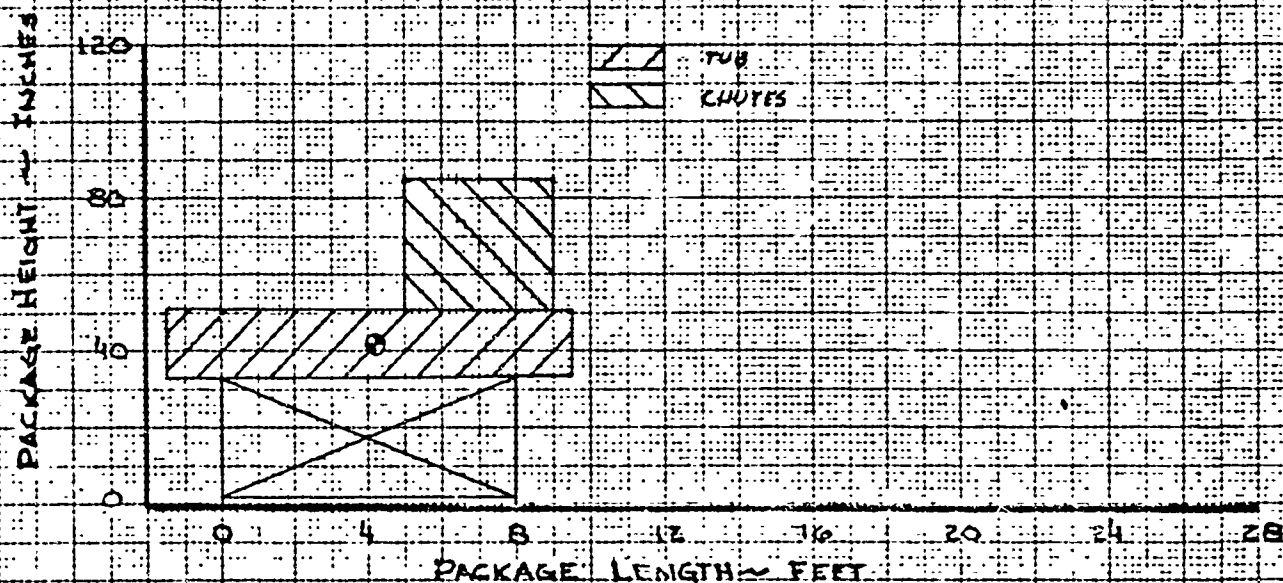
REPORT NO. ET 5473
MODEL G-141A (6008)
PAGE B-58

6008
264

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DEOP 42.4
PKG WT. 9,920 LBS.

SIDE VIEW (FWD ON A/C →)



END VIEW (LOOKING FWD.) A/C →

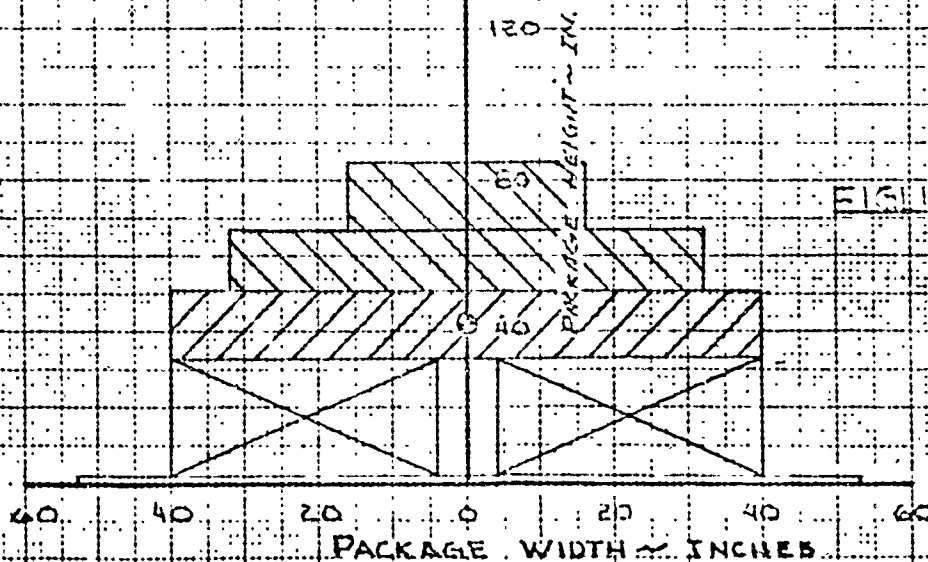


FIGURE 3-42D

6008
264

PREPARED BY Pemberton
 DATE B-20-65
 CHECKED BY _____

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

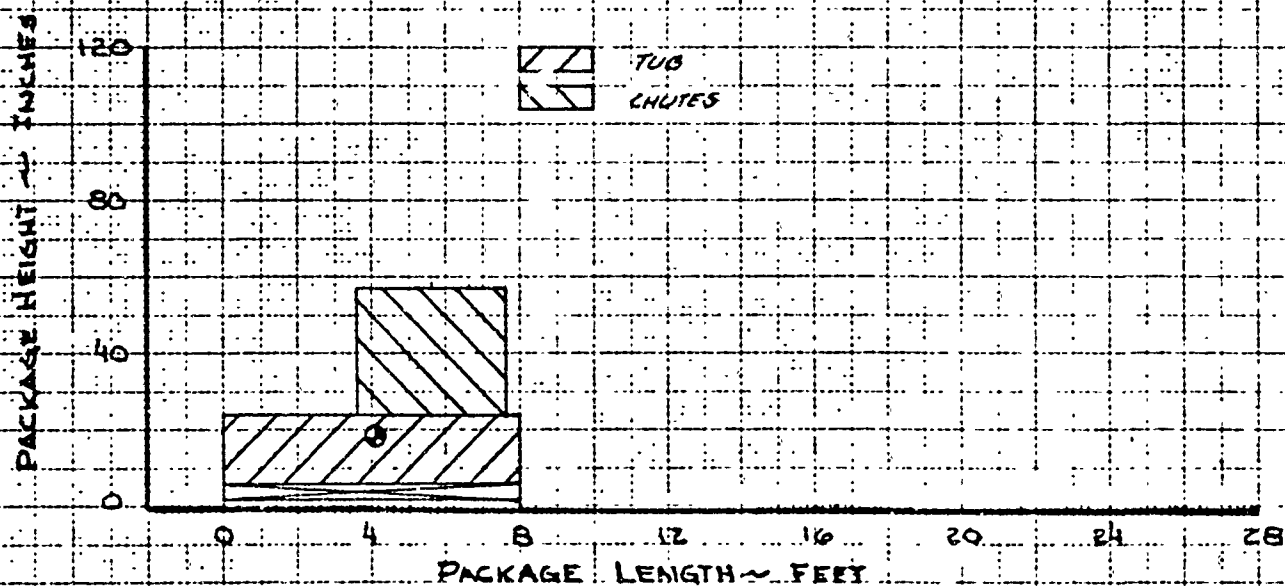
REPORT NO. ER 5473
 MODEL C-141A (6008)
 PAGE B-59

6008
265

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
 DROP 42-5
 PKG. WT. 9,710 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
 A/C →

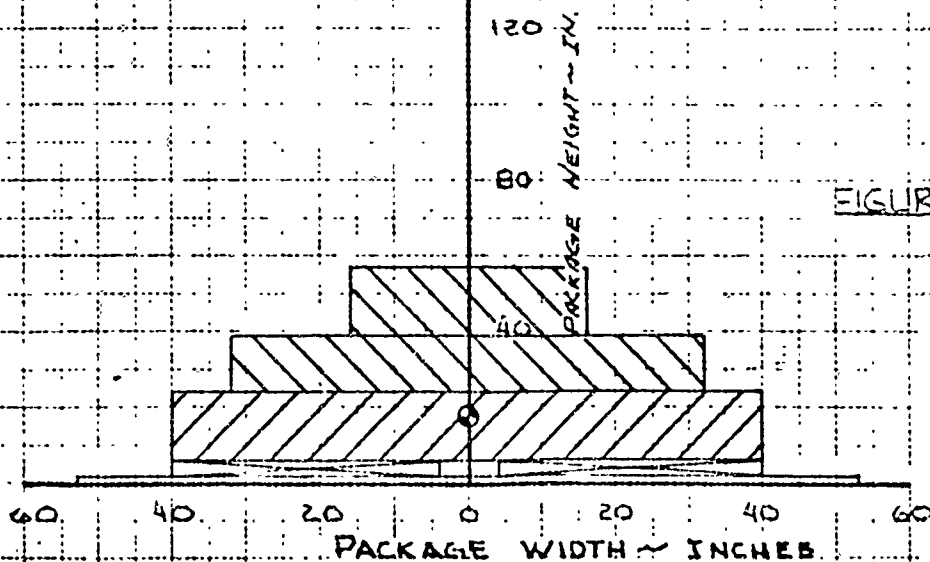


FIGURE B-42E

6008
265

PREPARED BY Pamberger
DATE 8-19-65
CHECKED BY _____

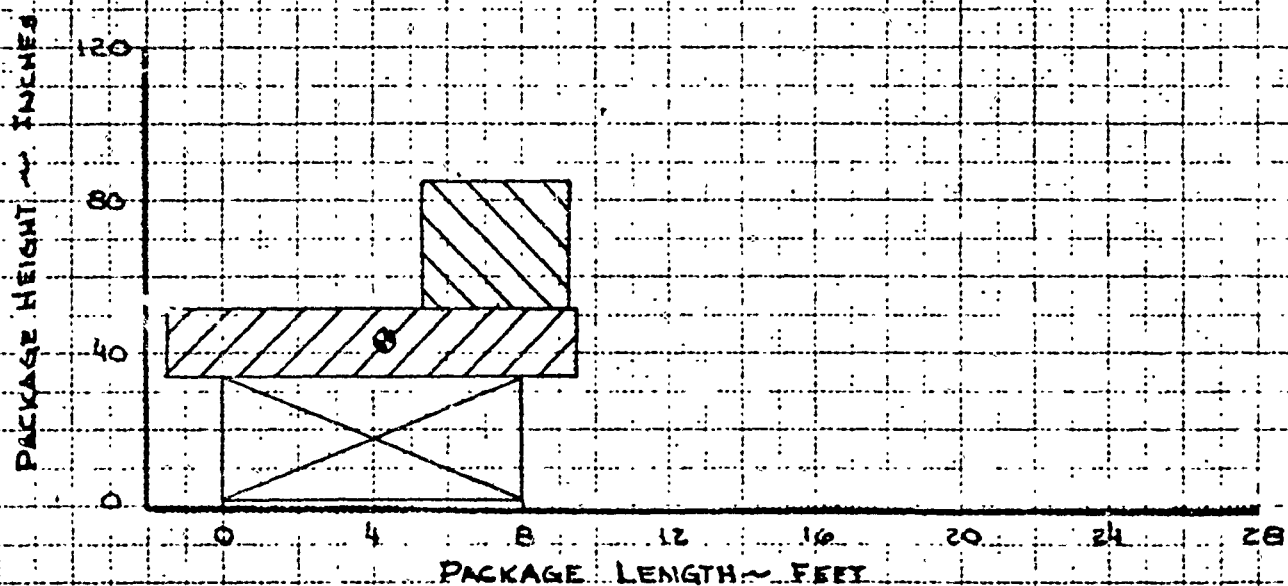
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A (600B)
PAGE B-60

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DROP 42.6
PKG. WT. 10,110 LBS

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.)
A/C ←

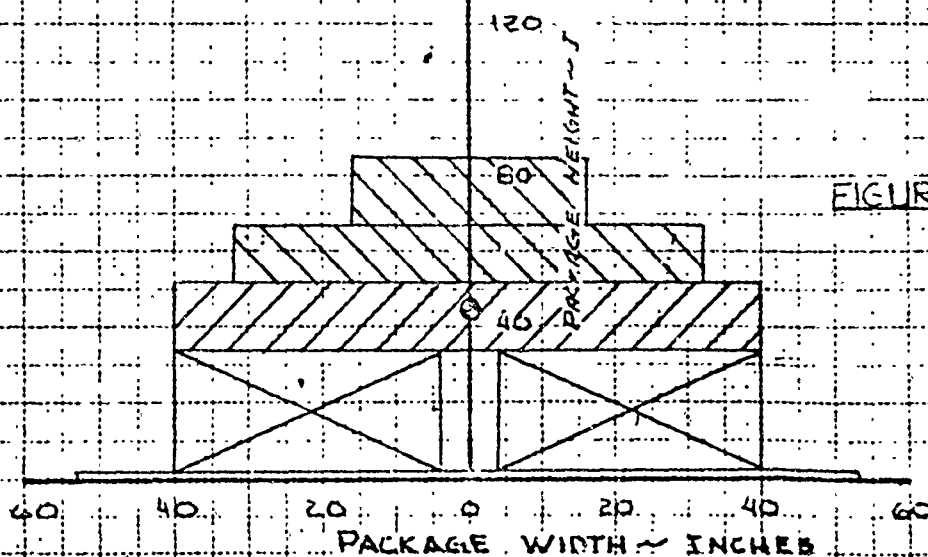


FIGURE B-42F

600B
265

PREPARED BY Pemberston
DATE B-19-65
CHECKED BY _____

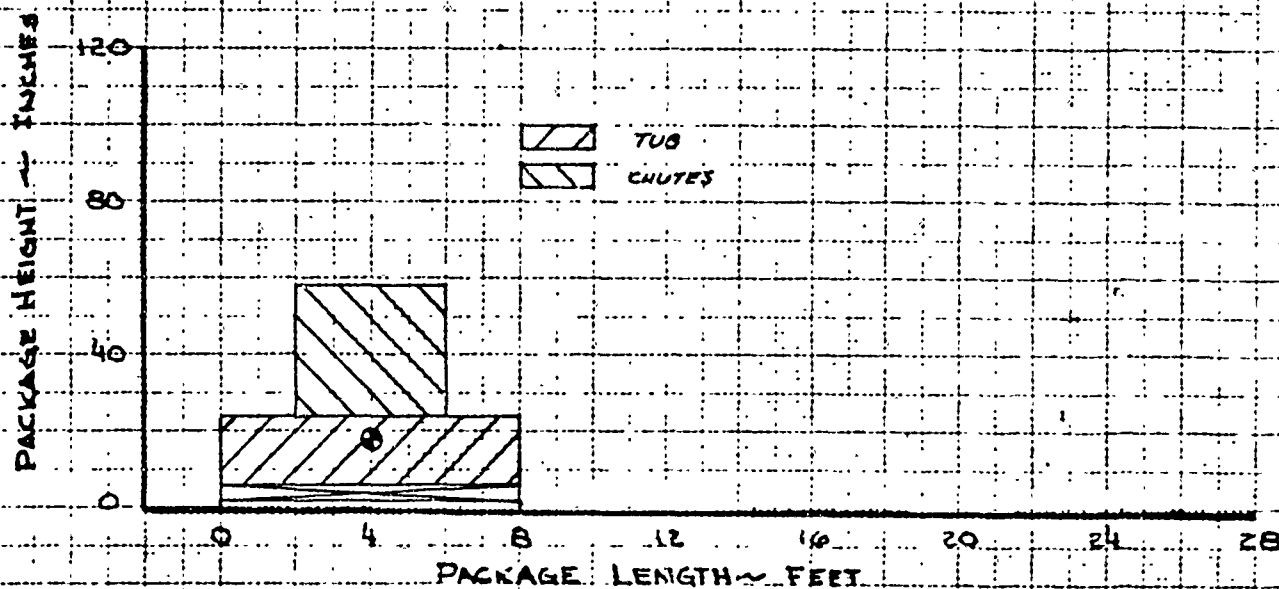
LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A (600B)
PAGE B-61

AERIAL DELIVERY PACKAGE DATA

FLIGHT 151
DEOP 42-7
PKG. WT. 9,530 LBS.

SIDE VIEW (FWD. ON A/C →)



END VIEW (LOOKING FWD.) A/C ⊙

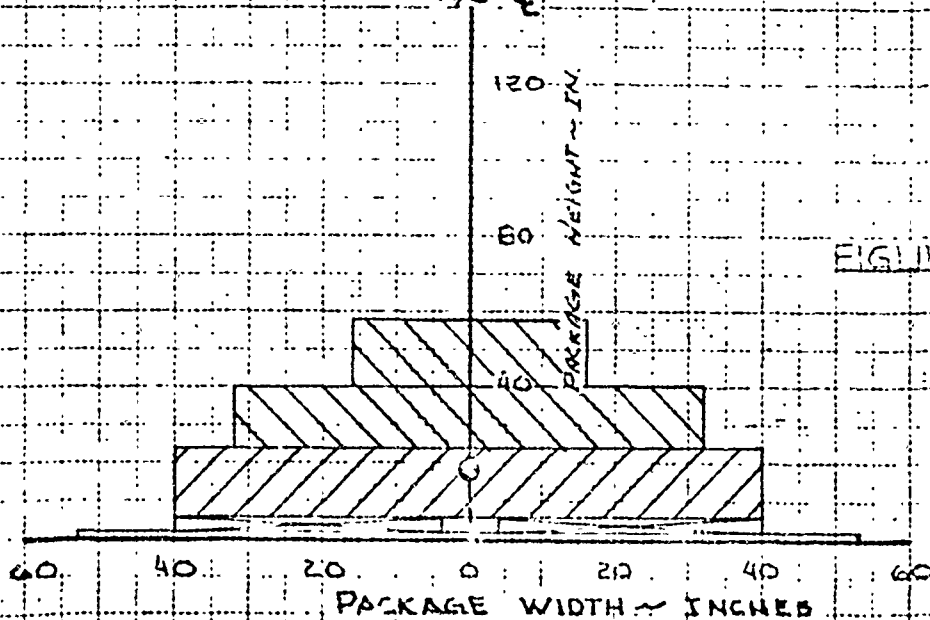


FIGURE B-425

6008
267

PREPARED BY *Famberton*
DATE *9-10-65*
CHECKED BY

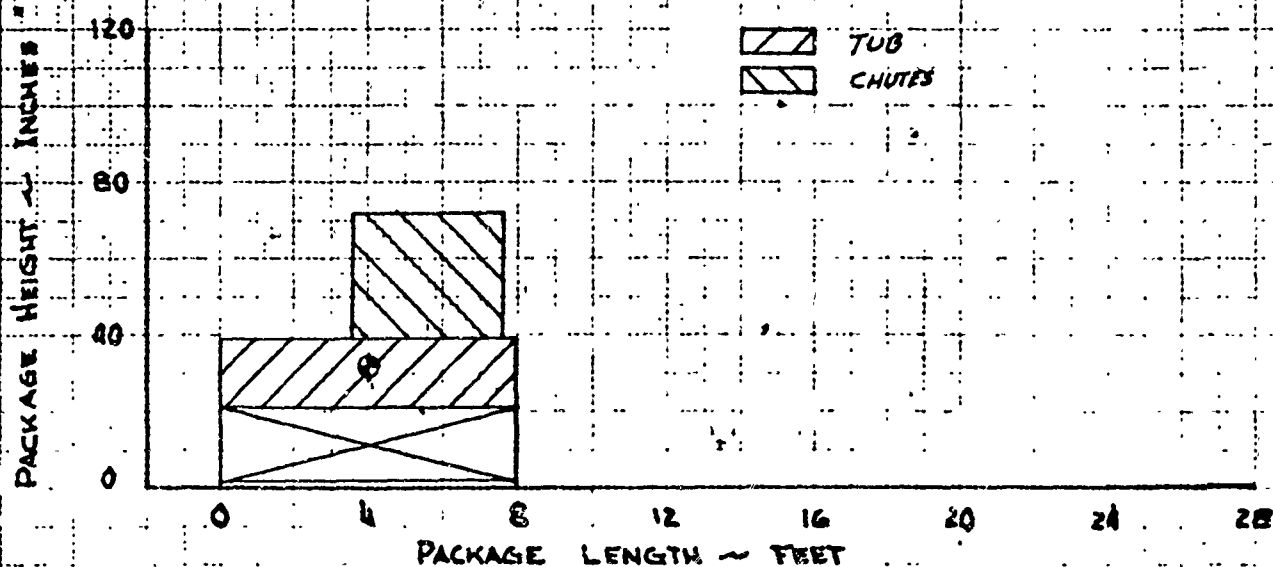
LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

WEIGHT ER 5473
C-141A (6008)
PAGE B-62

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-1 (FIRST OUT)
PKG. WT. 10,465 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

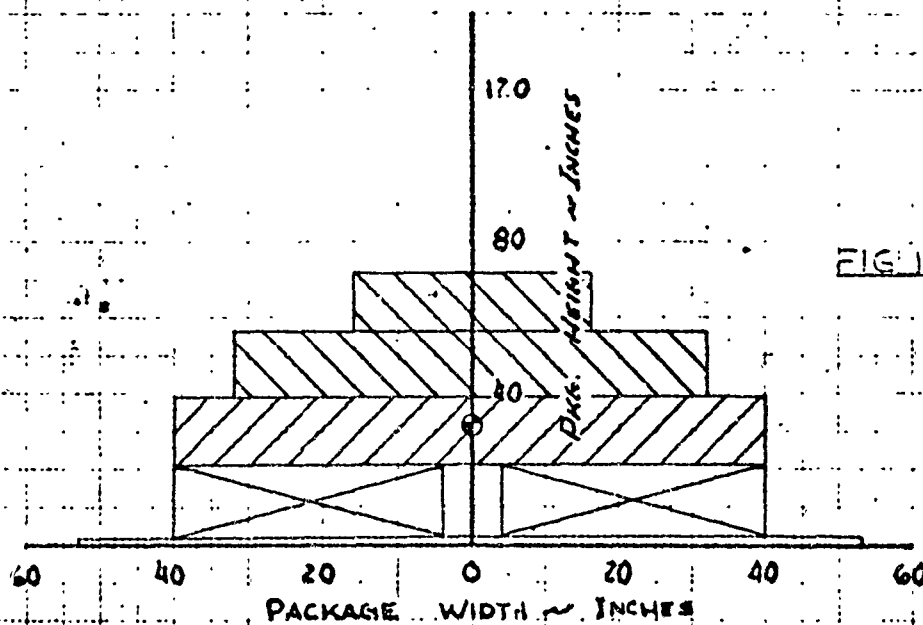


FIGURE B-43A

6008
268

PREPARED BY *Pemberton*
DATE *9-10-65*
CHECKED BY

LOCKHEED GEORGIA COMPANY
AERIAL DELIVERY PACKAGE DATA

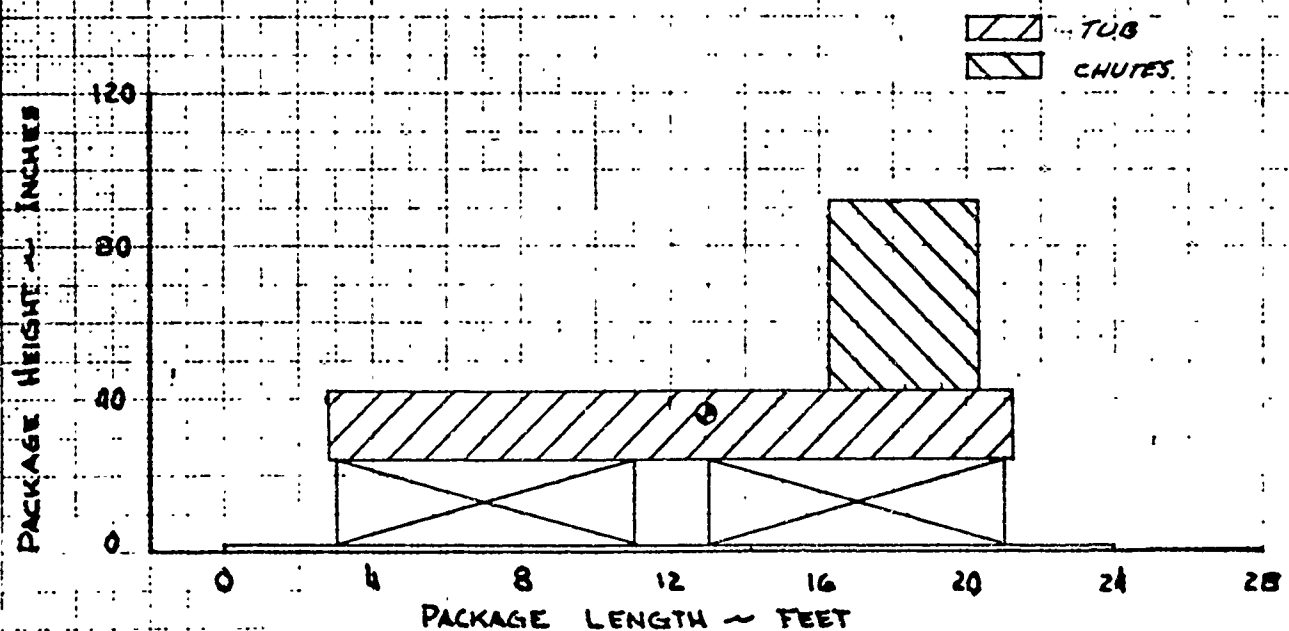
REPORT NO. *ER 5473*
C-141A (6008)
PAGE *B-63*

6008
269

AERIAL DELIVERY PACKAGE DATA

FLIGHT *178*
DROP *43-2 (second out.)*
PKG. WT. *35,025* LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

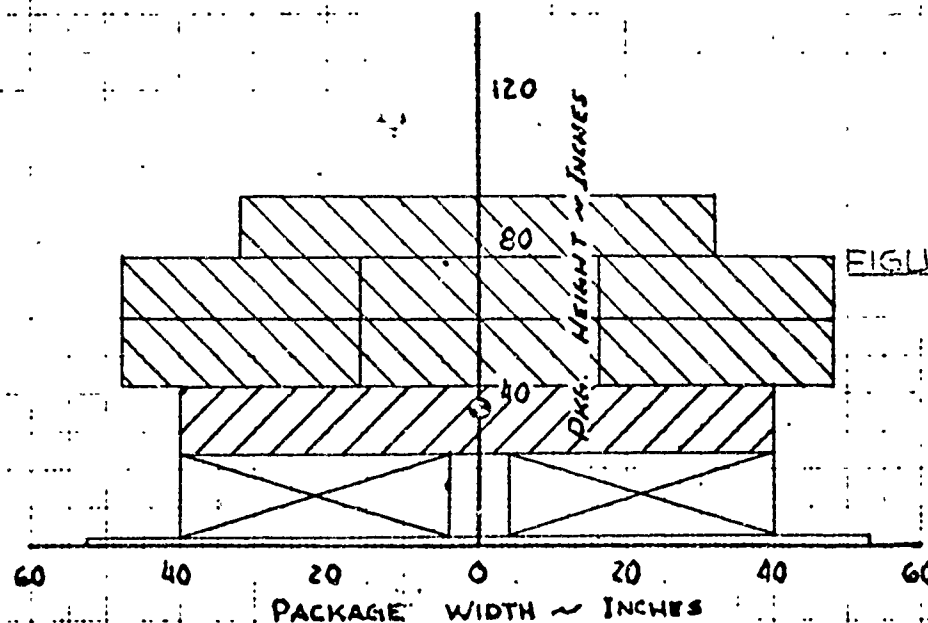


FIGURE B-43B

6008
269

PREPARED BY Pemberfor
DATE 9-10-65
CHECKED BY

LOCKHEED GEORGIA COMPANY
U.S. AIR FORCE, GEORGIA AIRCRAFT CORP.

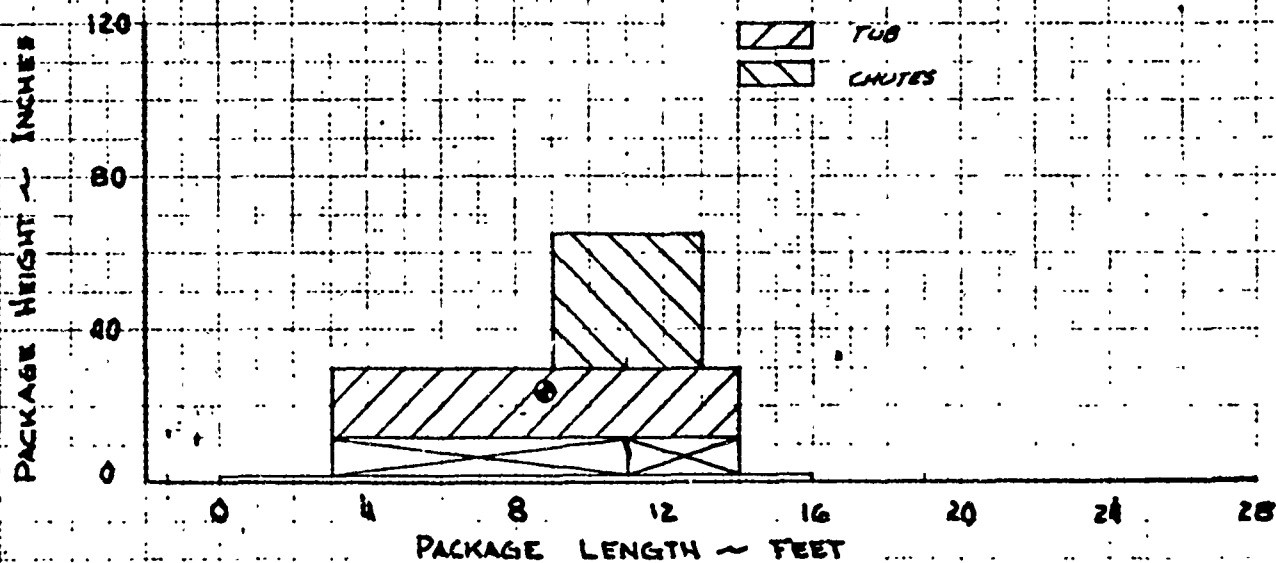
REPORT NO. ER 5473
FILE C-141A (6008)
PAGE B-64

6008
270

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-3 (THIRD OUT)
PKG. WT. 20,565 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

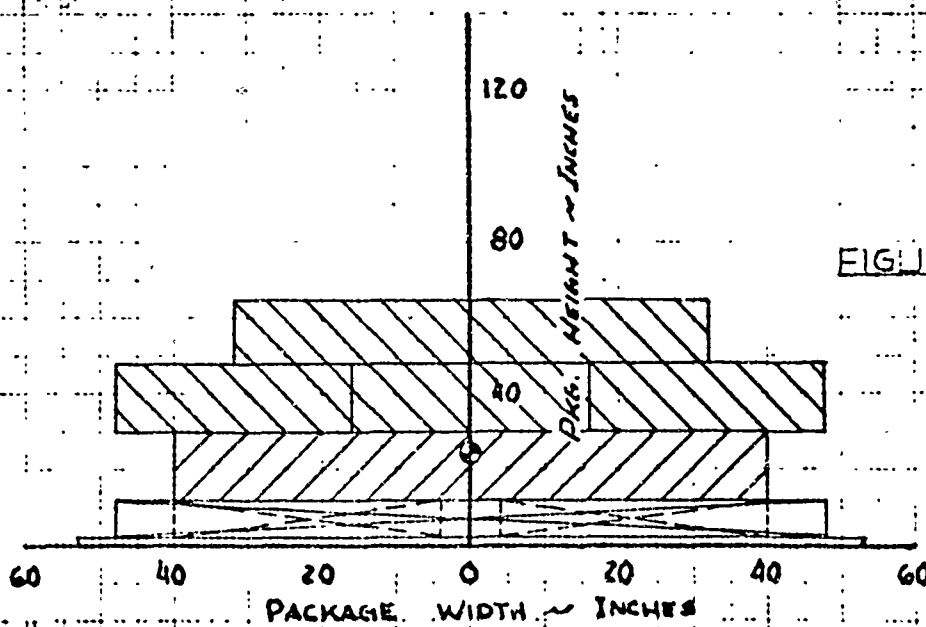


FIGURE B-43C

6008
270

PREPARED BY Ramberton
DATE 9-10-65
CHECKED BY

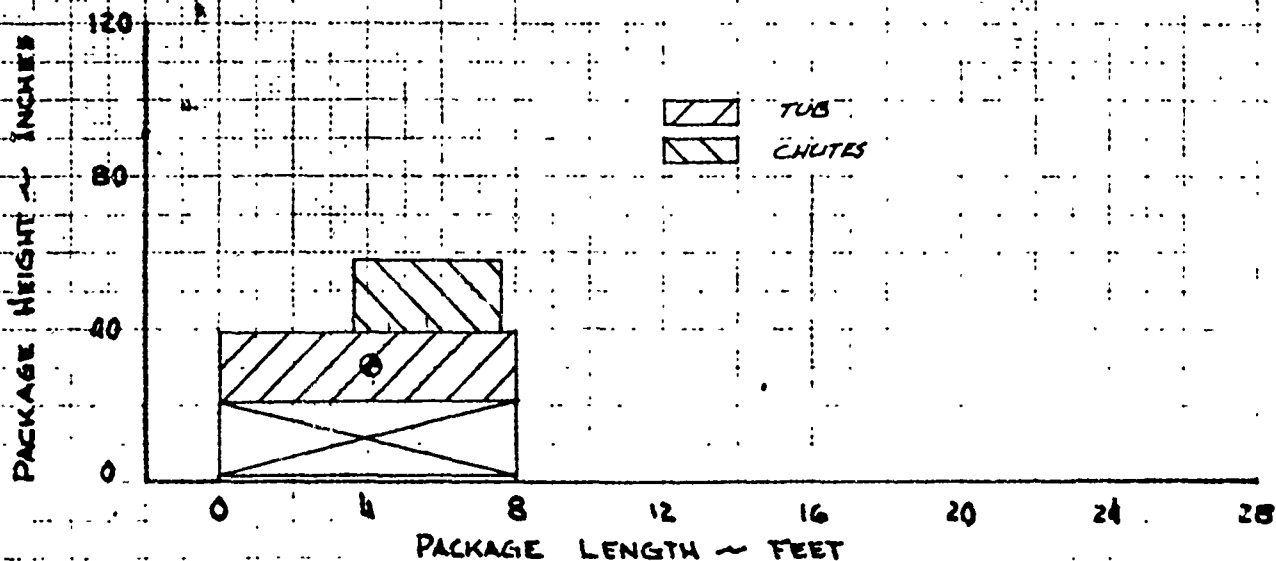
LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
H. L. C-141A (6008)
PAGE B-65

AERIAL DELIVERY PACKAGE DATA

FLIGHT 178
DROP 43-4 (LAST OFF)
PKG. WT. 5055 LBS.

SIDE VIEW (FWD. ON A/C ←)



END VIEW (LOOKING FWD.)

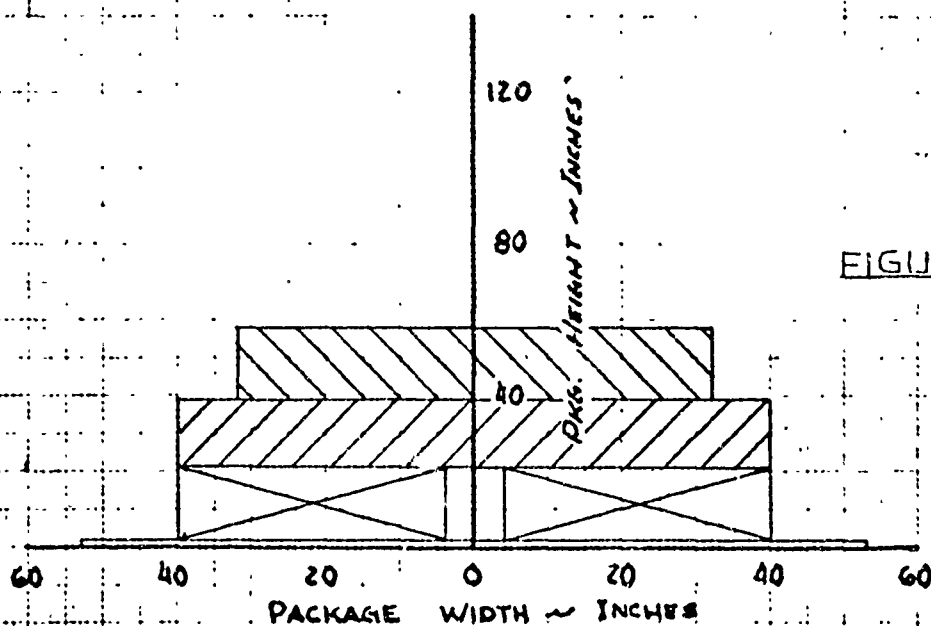


FIGURE R-43D

6008
271

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. ER 5478
MODEL C-141A
PAGE C-1

APPENDIX C

6008-405-2

45 TENSION

EXTRACTION FORCE (4000 LBS. LOAD)

EXTRACTION FORCE
1-15' CHUTE ~ 80' EXT. LINE

150

AVERAGE EPR (4 ENGINES)

ENGINE PRESSURE

RATIO

1.50

20 T.E. UP

ELEVATOR POSITION

DEGREES

Se

20

20 NOSE UP

NOSE

NOTE:

1. GW ~ 190,000 LBS. (APPROX)
2. CG ~ N/A
3. FLAPS ~ 26 DEG.
4. LH ~ 0.2 DEG. (A/C NUJ)
5. FAT ~ 6.0 °C

PREPARED BY FCW
3-8-65
dep

ER 5473
C-141A
C-2

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6003
FLIGHT 73 DATE 3-4-65

RUN 3

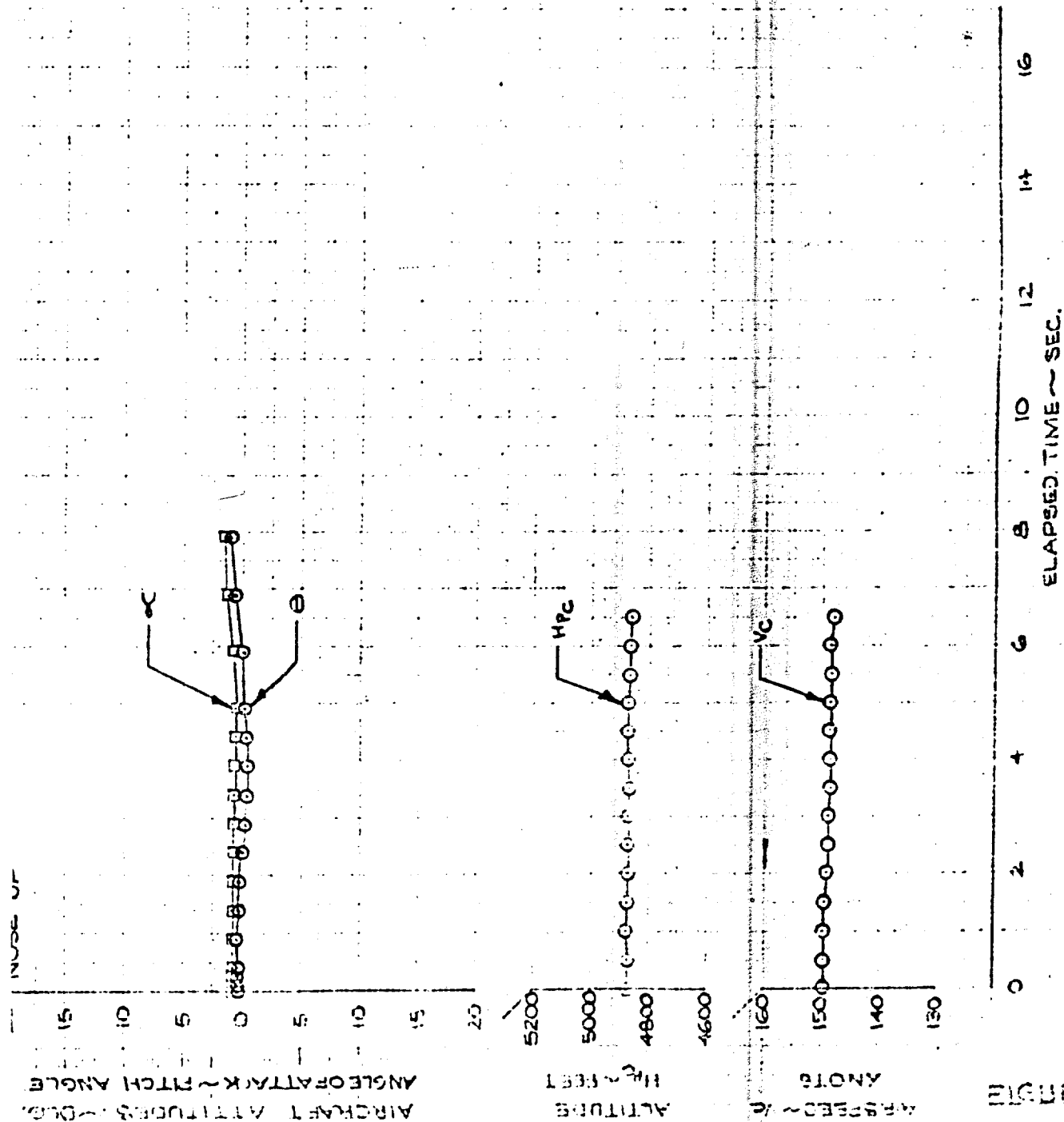
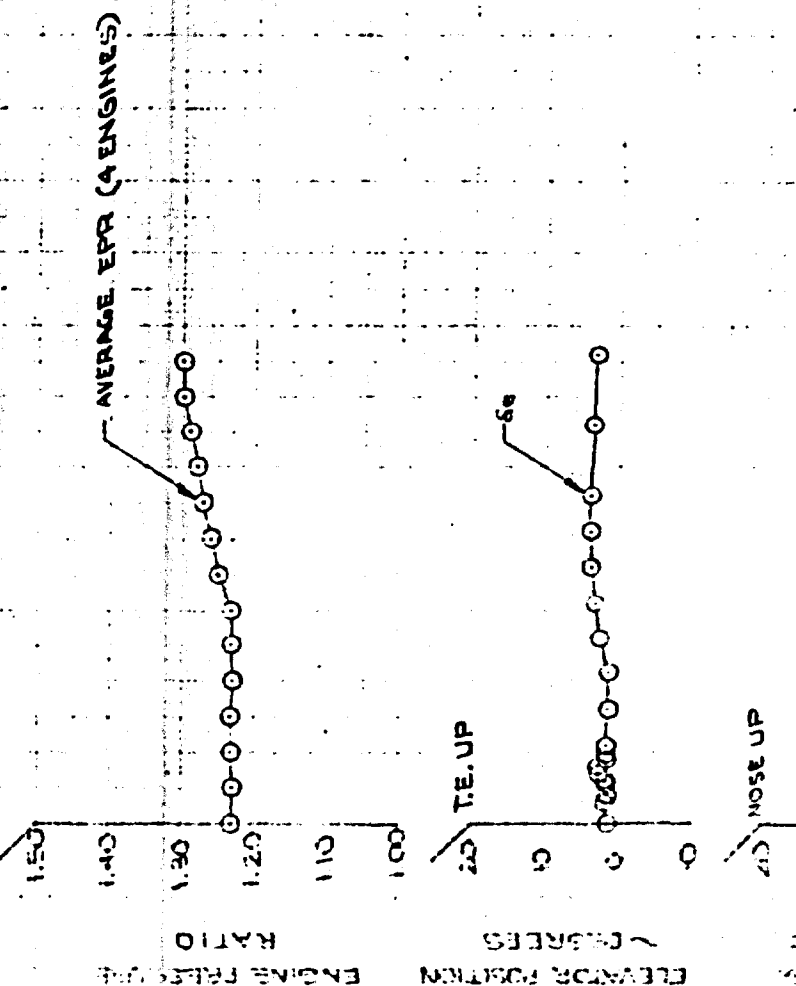
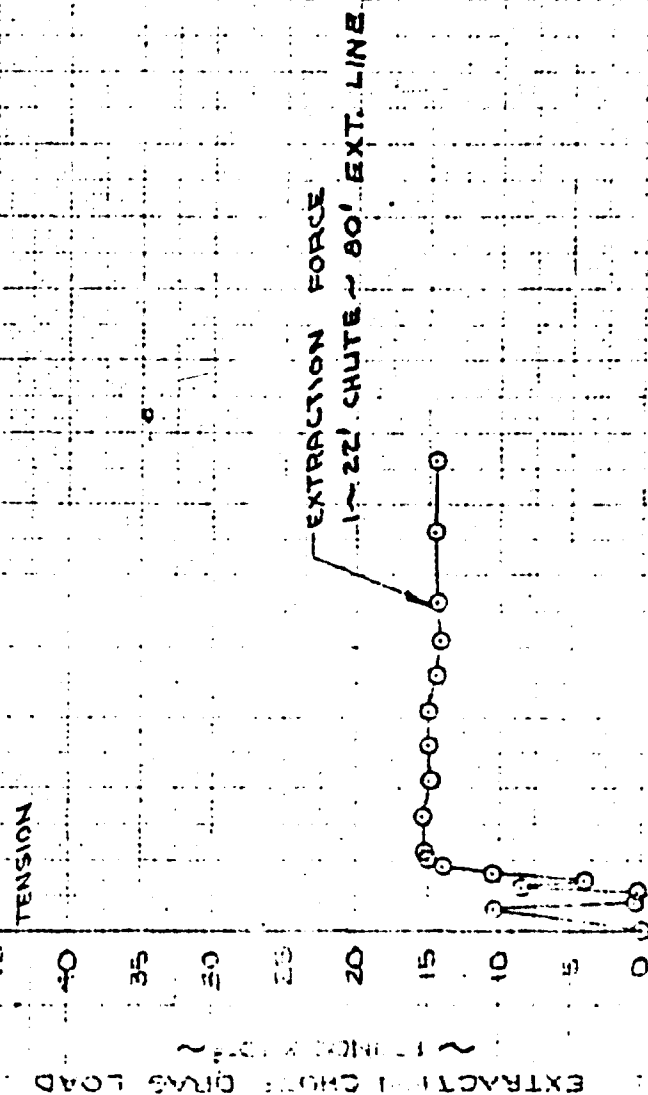


FIGURE C1A

Best Available Copy

REVISIO 12-11-65 R
MCH
GOOD - ADS-2
ED 3-31-65
RSA



NOTE:

1. GW ~ 180,000 LBS. (APPROX.)
2. CG ~ NA
3. FLAPS ~ 26 DEG.
4. LH ~ 0.3 DEG (A/C N.O.)
5. FAT ~ 6.0 °C.

PREPARED BY: TED J. RSA
 DATE: 3-8-65
 FILE:

ER 5473
 C-141A
 C-3

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AF63-8077 LAC 6008
 FLIGHT 73 DATE 3-4-65

RUN 5

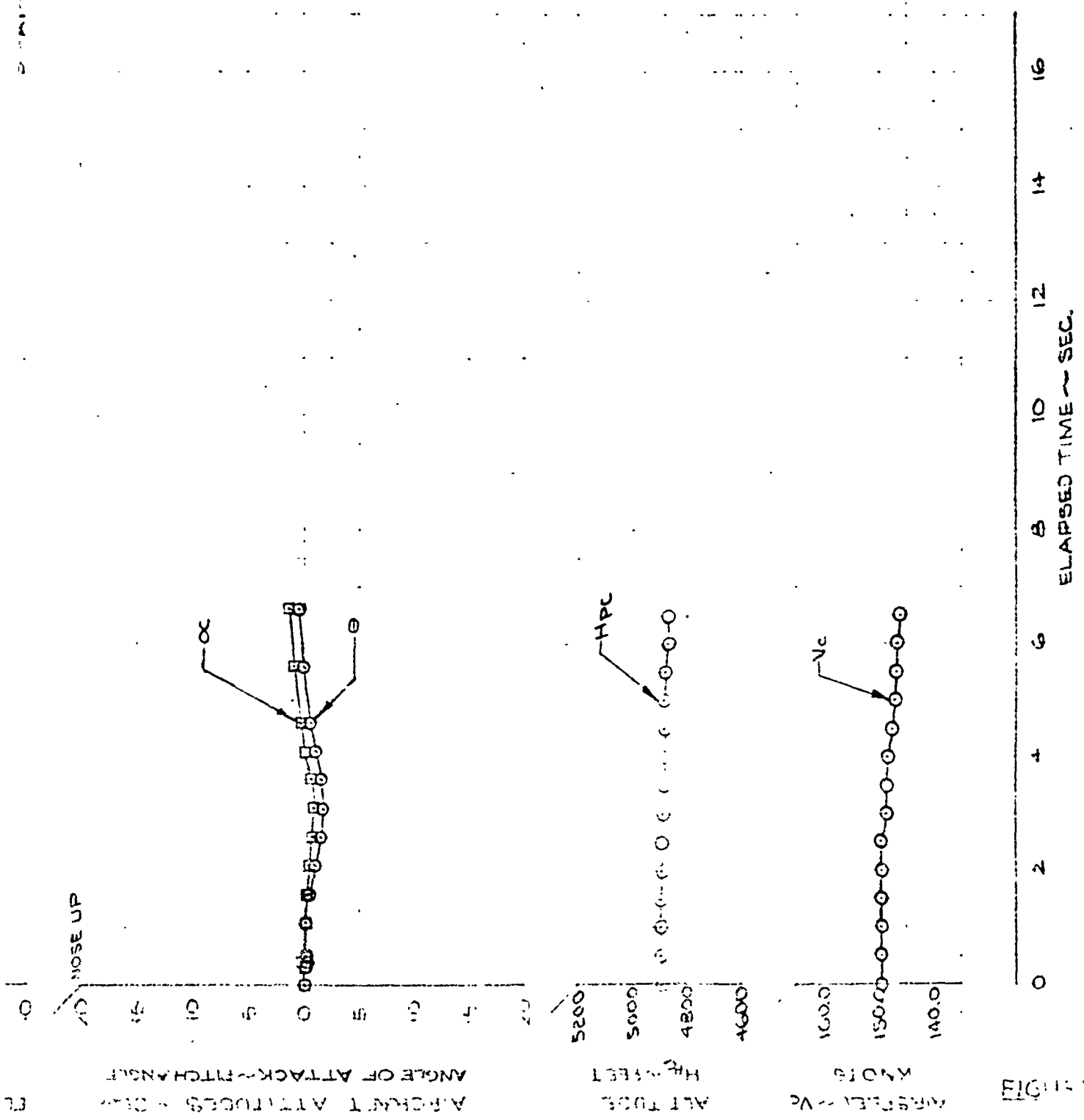
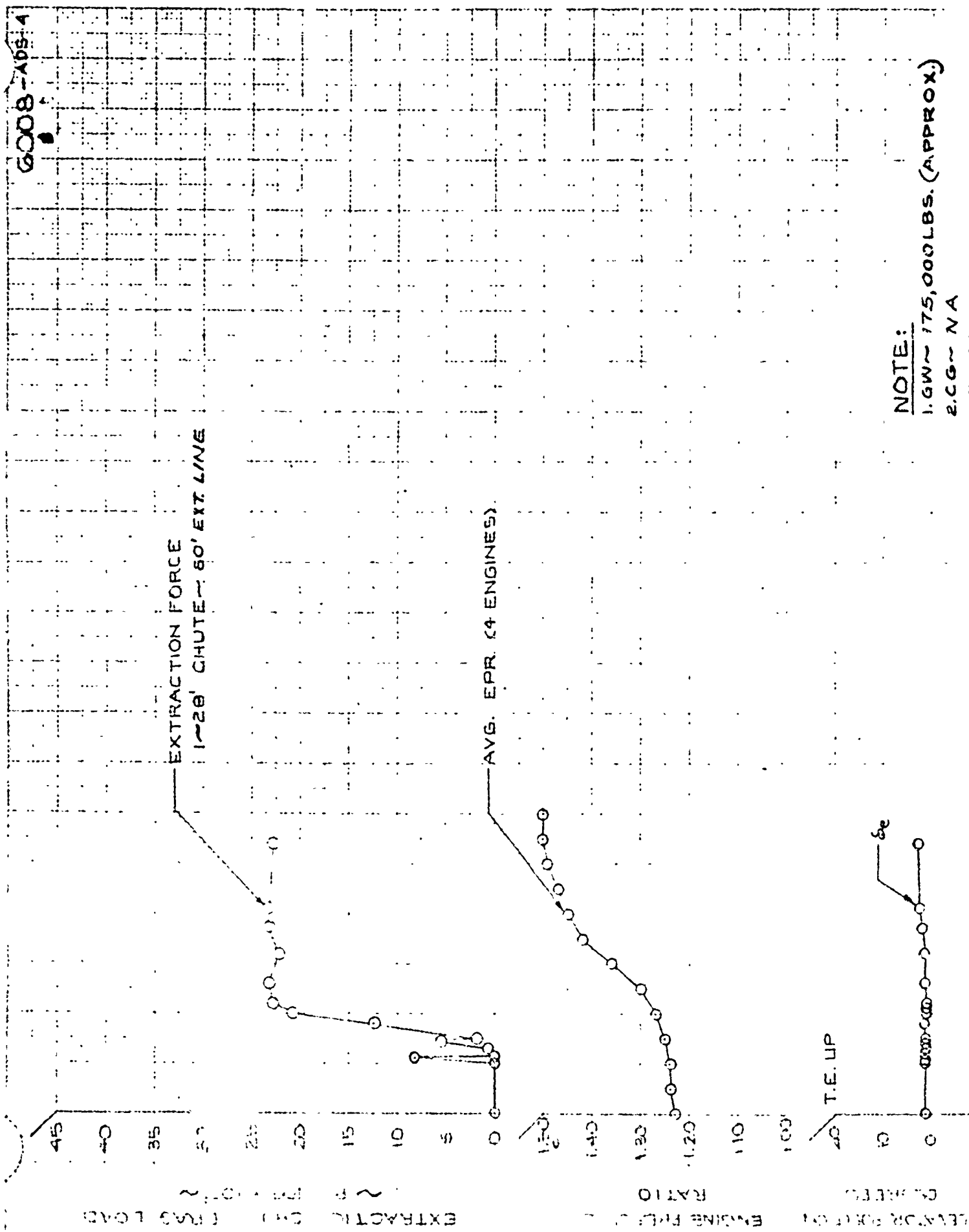


FIGURE 1-13

REVISED 12/72

6008-ADS-3
 REVISED 3-1-65
 RSA

6008-AD8-4



PREPARED BY JWP
 3-8-65
[Signature]

ER 5473
 C-141A
 C-4

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077

LAC 6008

FLIGHT 73

DATE 3-4-65

RUN NO. 6

- 2. CG ~ N/A
- 3. FLAPS ~ 26 DEG.
- 4. $\dot{A}_H \sim 0.3$ DEG. (A/C N.D.)
- 5. FAT ~ 6.0 °C.

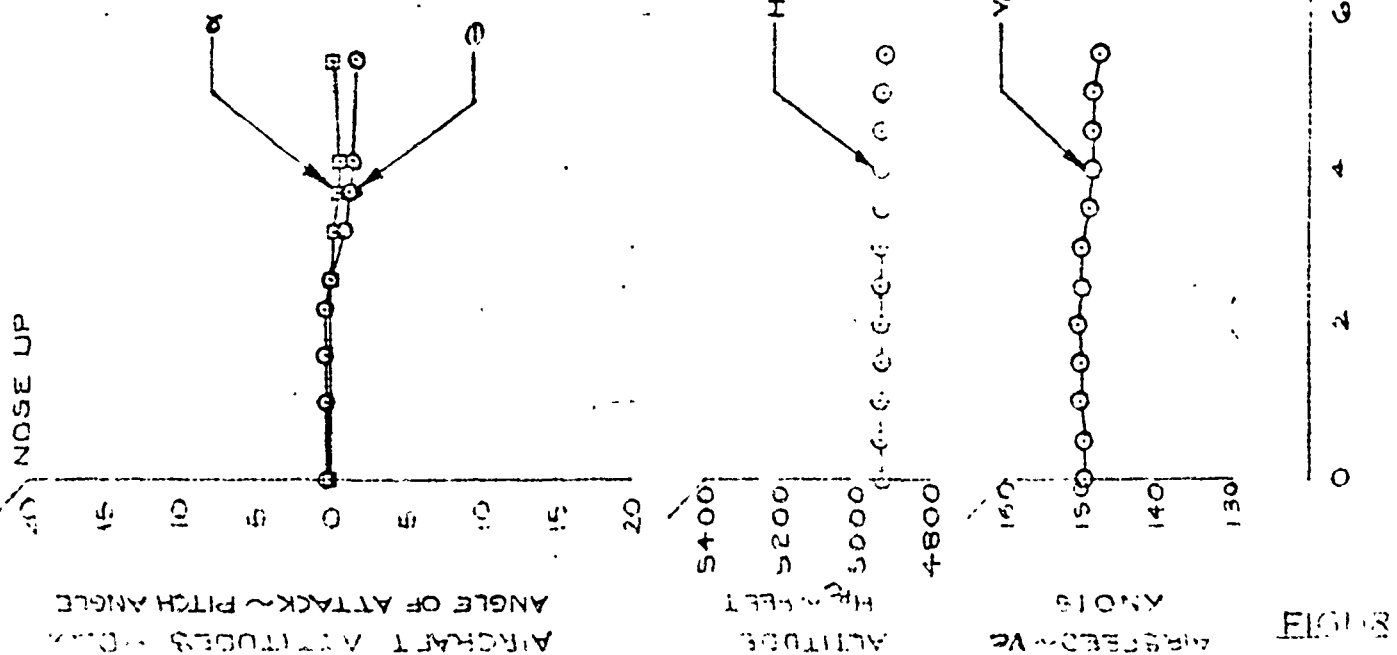


FIGURE C-1C

REVISED 1-8-65
 MMH

6008 ADS-4
 REVISED 3-31-65
 RSA

6008-ADS-B

TENSION

EXTRACTION CHORD DRAG LOAD

~ 100000 x 10⁻³

EXTRACTION FORCE
1-22' CHUTE ~ 80' EXT. LINE

AVERAGE EPR (4 ENGINES)

ENGINE PRESSURE RATIO

ELEVATOR POSITION DEGREES

T.E. UP

Se

NOTE:

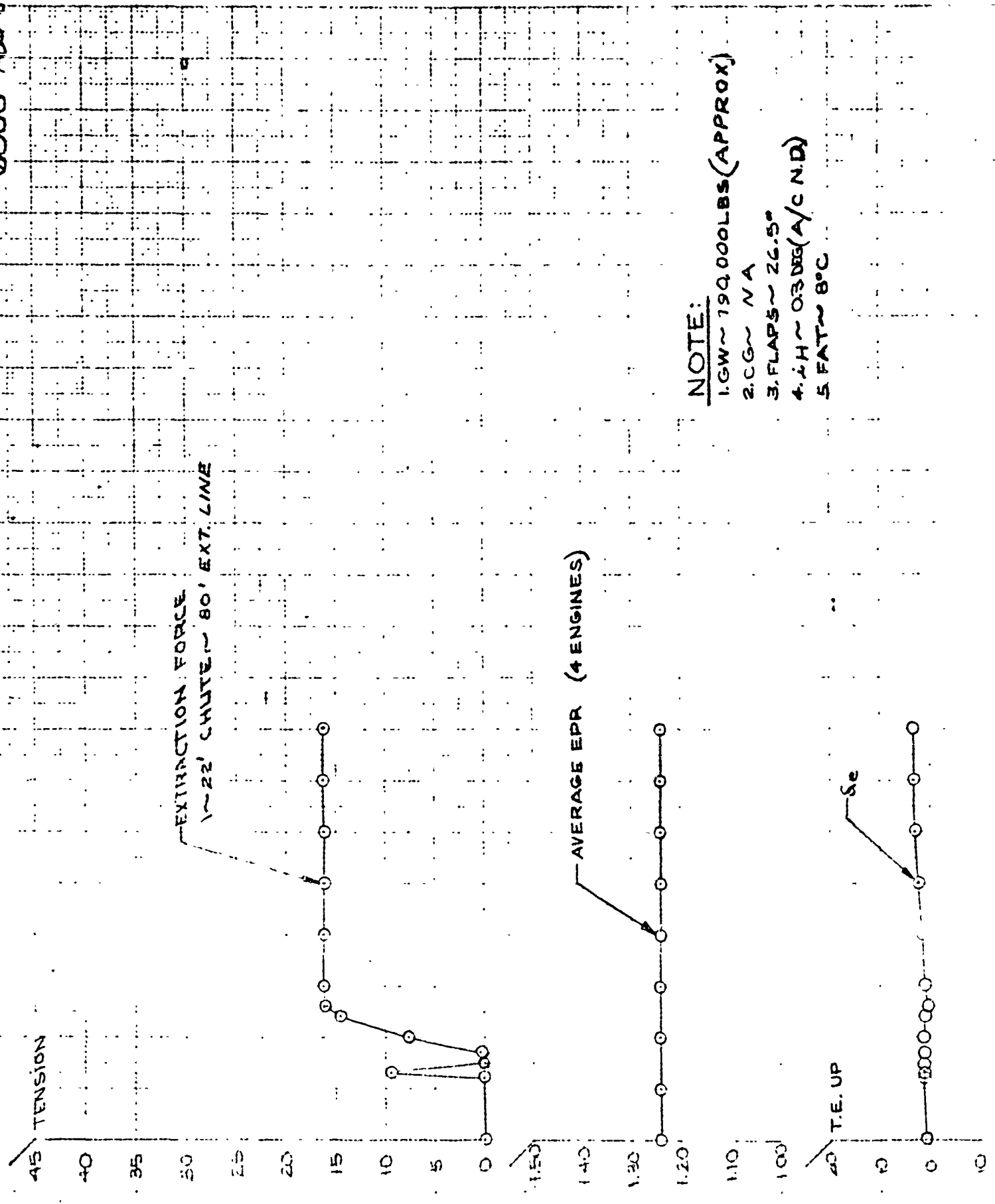
1. GW ~ 190,000 LBS (APPROX)

2. CG ~ N/A

3. FLAP ~ 26.5°

4. LH ~ 0.3 DEG (A/C N.D)

5. FAT ~ 8°C



TED
3-8-65
Jeb

ER 5473
C-141A
C-5

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077

LAC 6008

FLIGHT 74

DATE 3-5-65

RUN 3

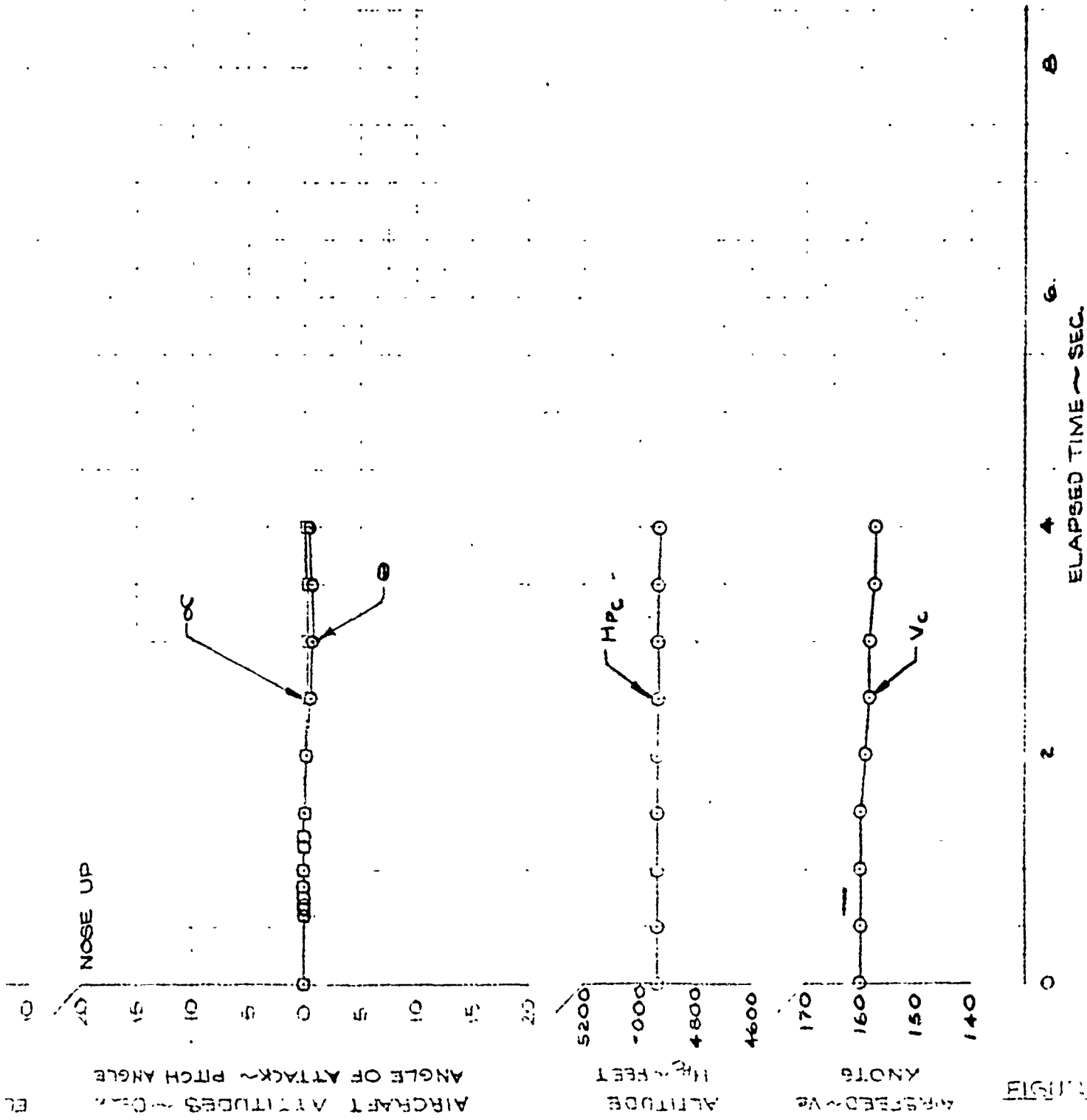
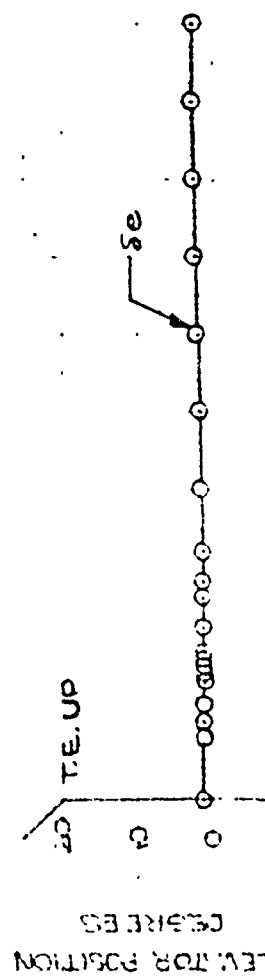
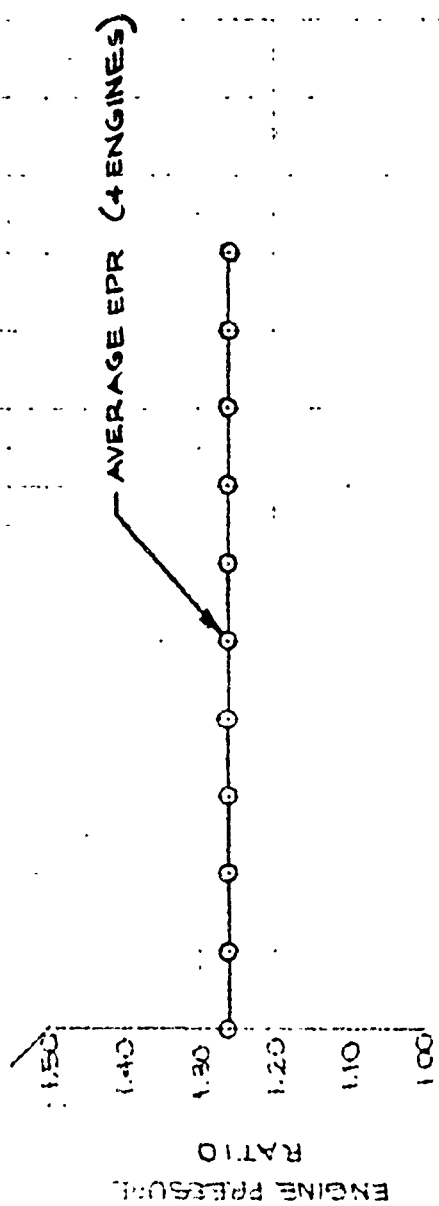
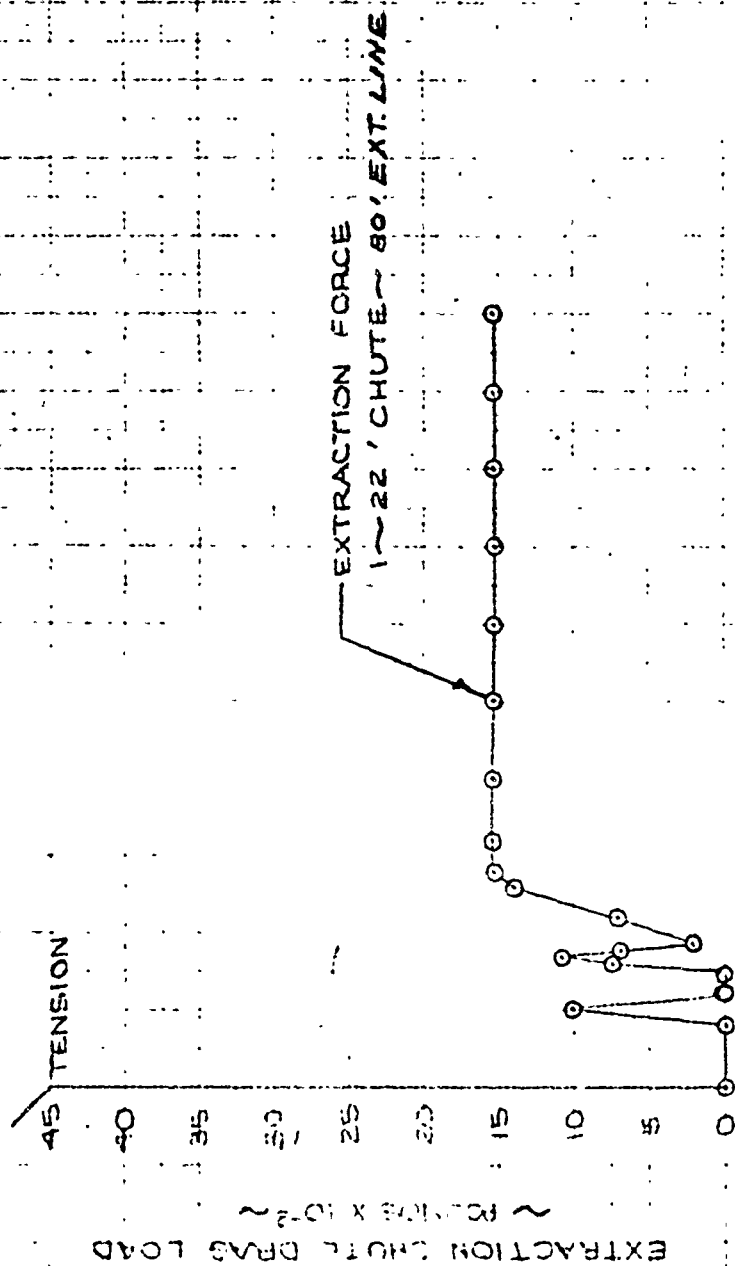


FIGURE 12-2A

REVISED 12 65
M.H.

6008 - ADS
REV. 3-5-65

6008-ADS-7



NOTE:
 1. GW ~ 185,000 LBS (APPROX)
 2. CG ~ NA
 3. FLAPS ~ 26.5°
 4. LH ~ 03 DEG (A/C N.D.)
 5. FAT ~ 8.0°C

TCH & RSA
3/9/65
JLS

ER 5473
C-141A
C-6

ADS EXTRACTION CHUTE TOW
TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 74 DATE 3-8-65

RUN 4

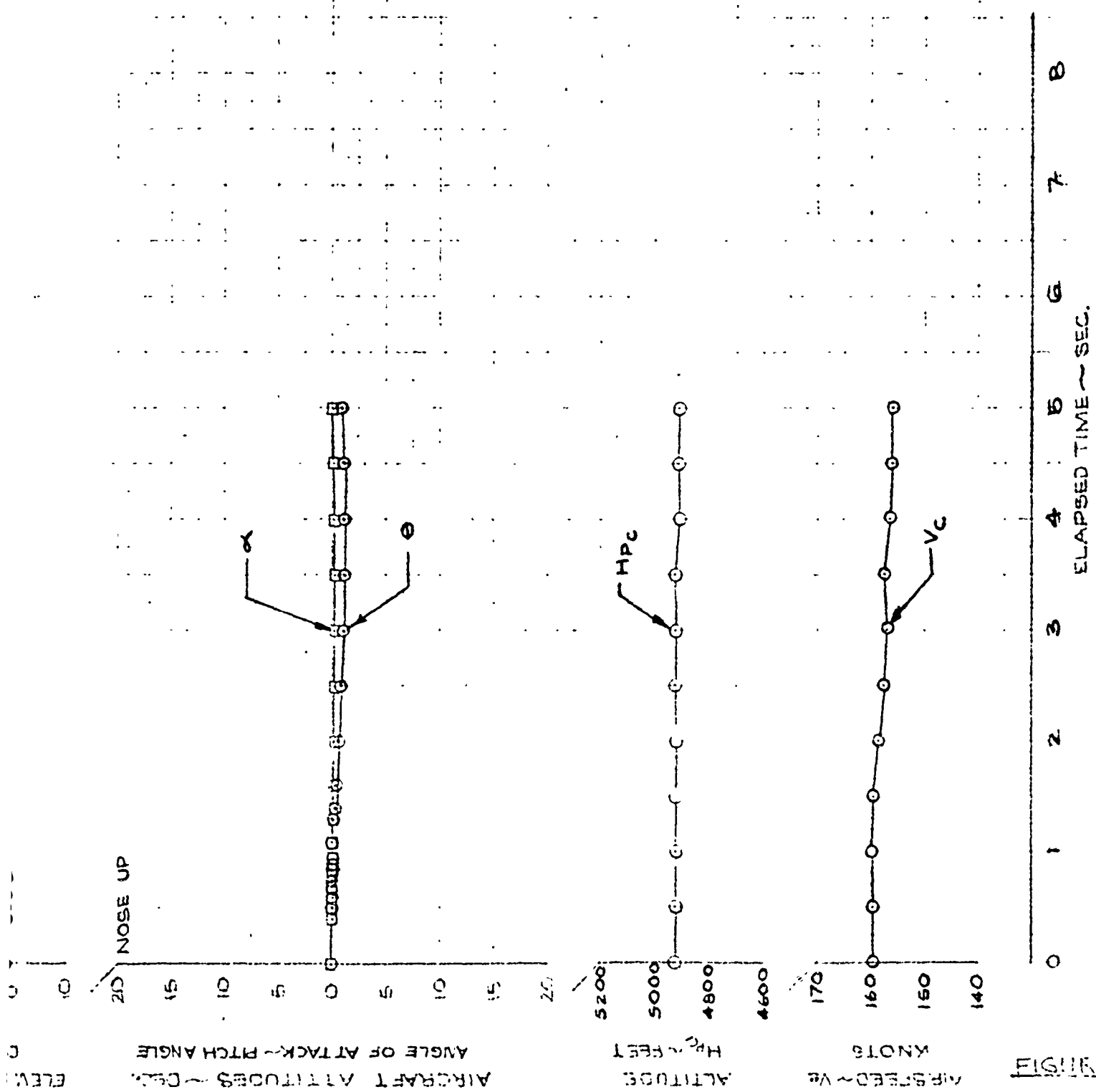


FIGURE C-28

REVISED 12-8-65
M&H

6008-ADS-7
REV 3-31-65
R54

PREPARED BY **TED**
 DATE **3-10-65**
 CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **PR 5473**
 MODEL **C-141A**
 PAGE **C-7**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**
AFG3-8077 **LAC 6008**
FLIGHT 14 **DATE 3-5-65**

RUNS

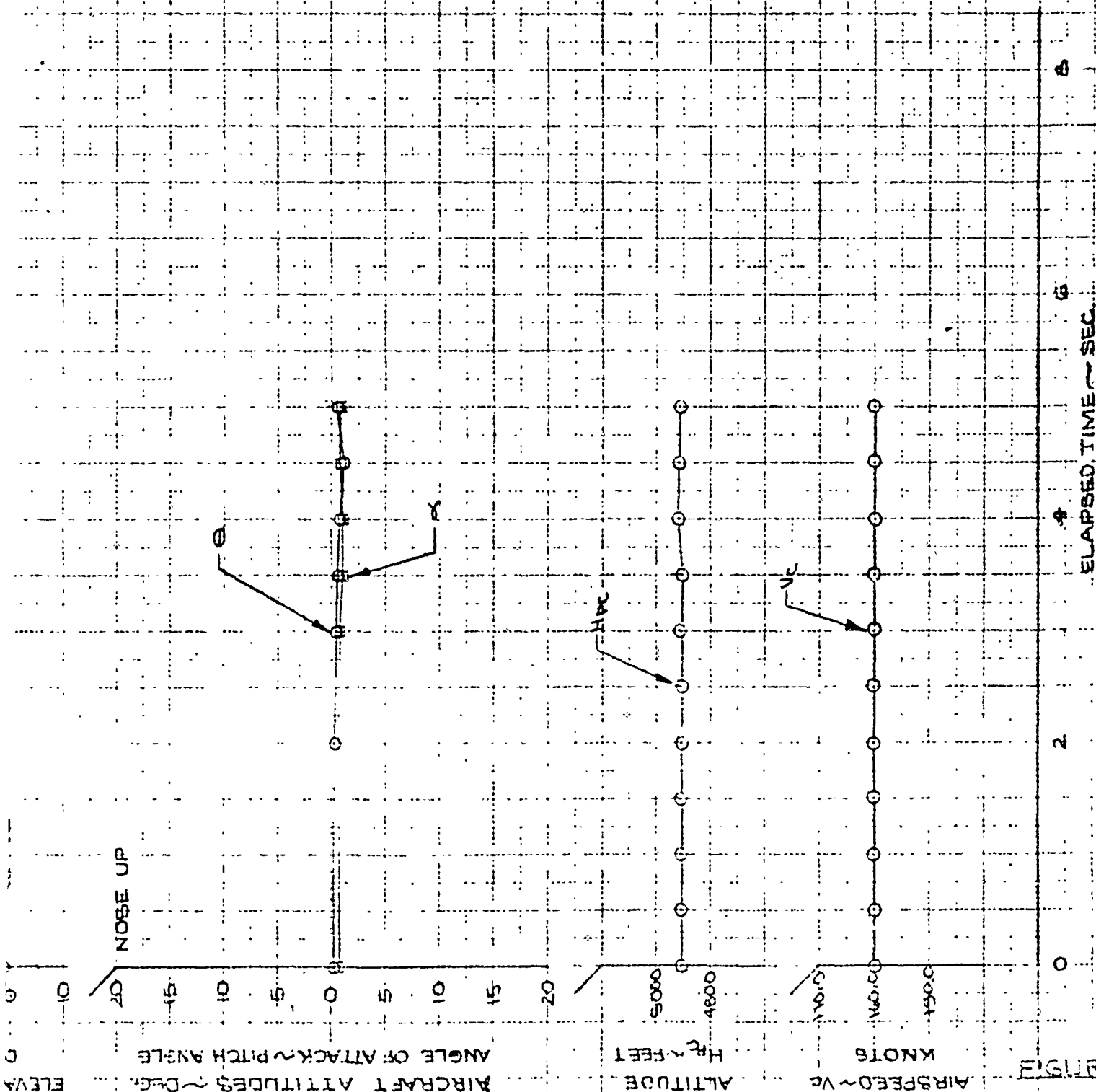


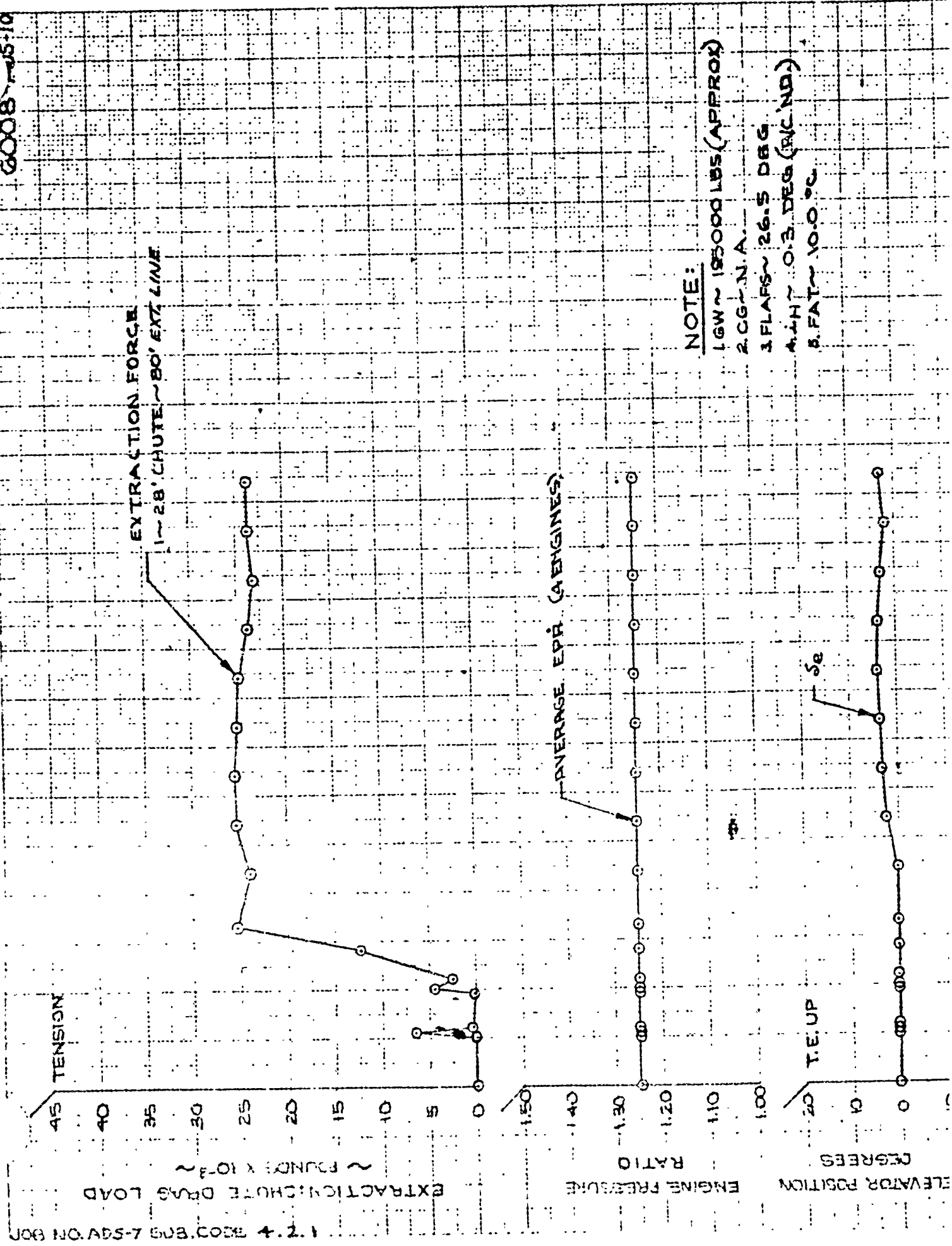
FIGURE C-20

6008-ADS

REVISED 12-8-65
 NBN

REV 3-31 65 TKCA

6008-15-10



PREPARED BY **RSA**
 DATE **3/9/65**
 CHECKED BY **SEP**

ENGINEERING COMPANY
 AERONAUTICAL RESEARCH CORPORATION

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **C-8**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**

AFG3-8077

LAC 6008

FLIGHT 75

DATE **3/5/65**

RUN 2

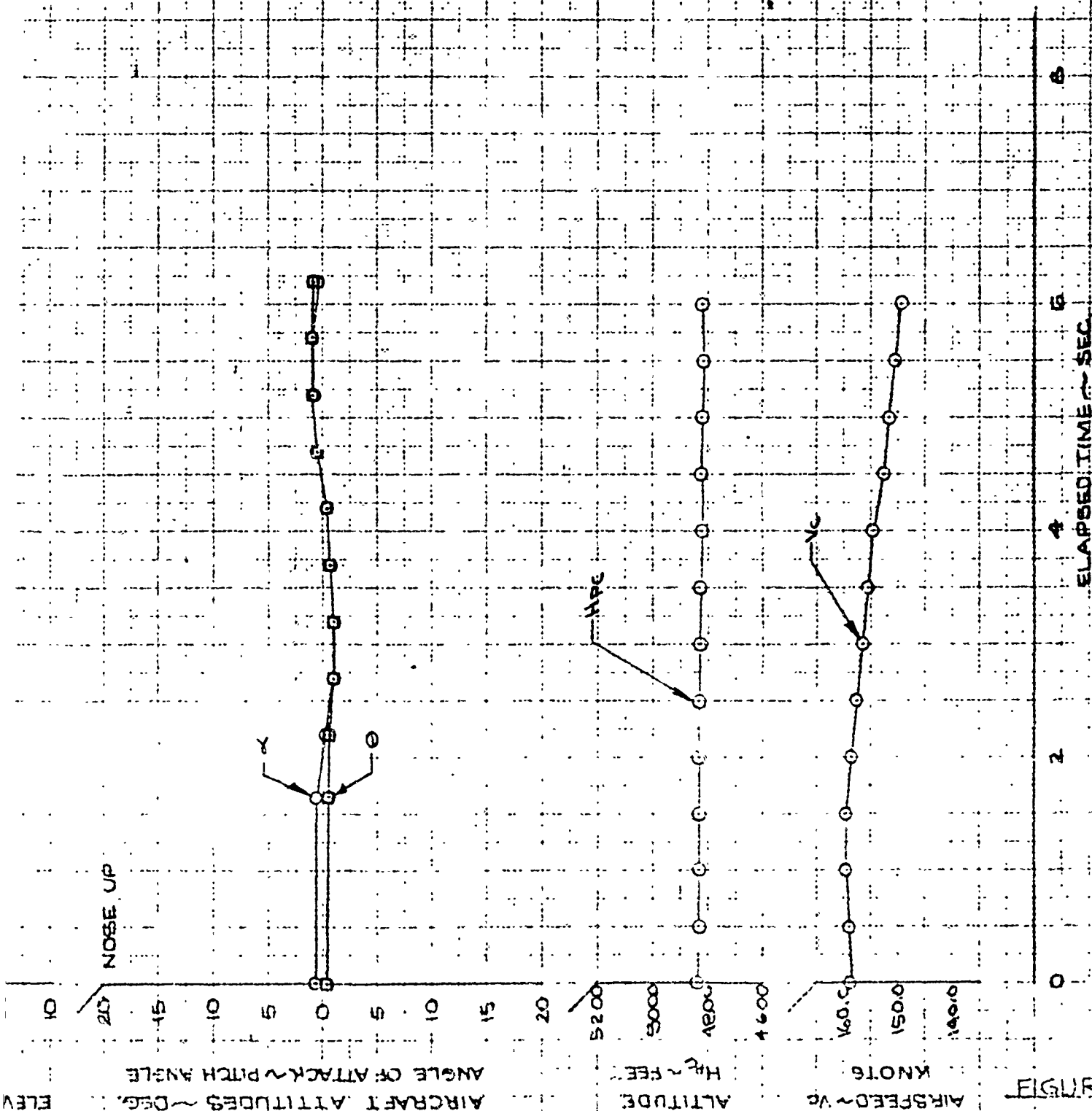


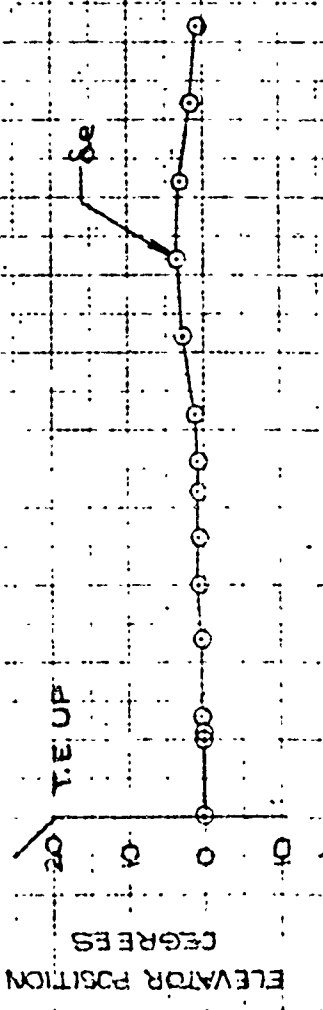
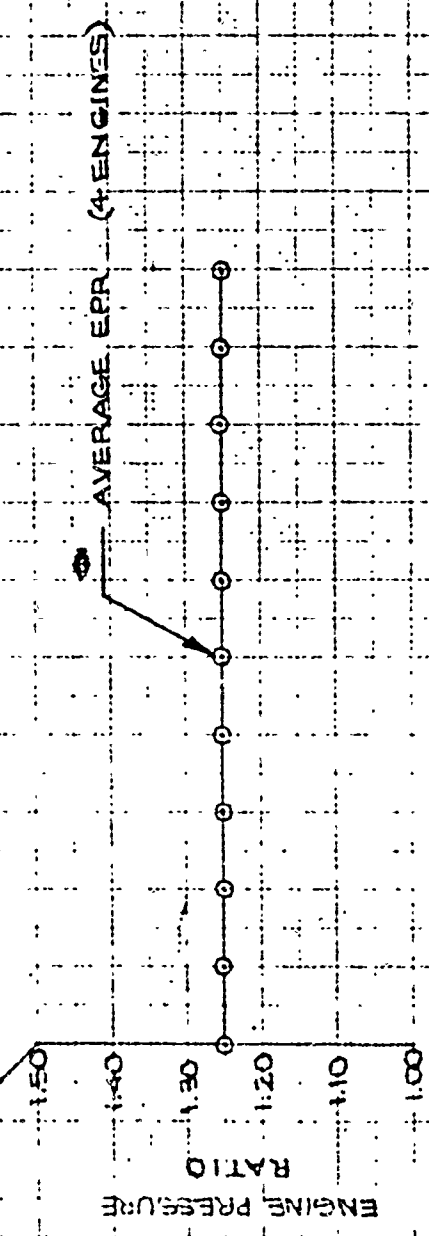
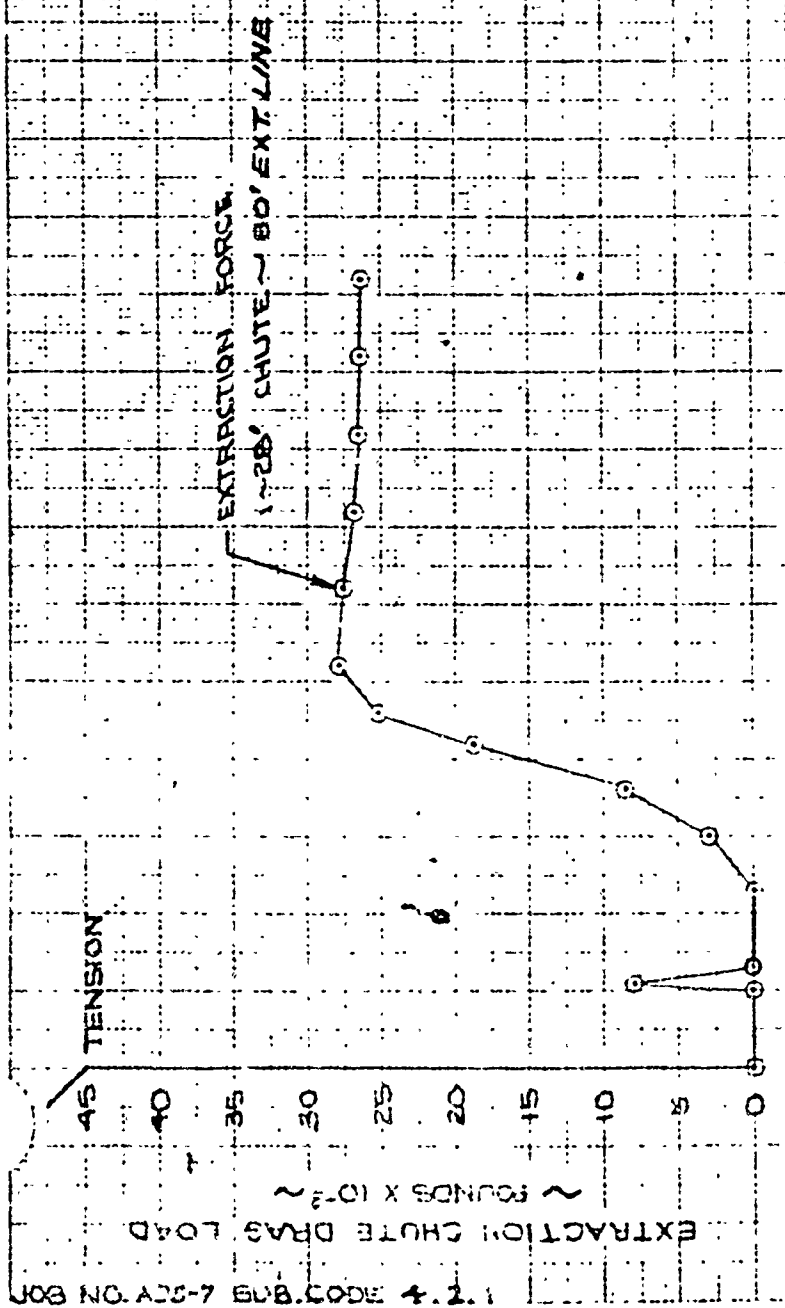
FIGURE G-3A

6008-ADS-10

REVISED 12-8-65
 MBH

REV. 3-23-65 RSA

6008-7008-1



NOTE:

1. GW ~ 193,000 LBS (APPROX)
2. CG ~ 14A
3. FLAPS ~ 26 DEG
4. H ~ 0.3" (A/C N.D.)
5. FAT ~ 10°C

173000

PREPARED BY TED
 DATE 3-9-65
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE C-9

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 75 DATE 3-5-65

RUN 3



FIGURE C-3B

6008-ADS-II

REVISED 12-8-65
 MBH

REV 3-23-65 RSA

6008-7405-12



NOTE:
 1. GW ~ 18000 LBS. APPROX.
 2. CG ~ N.A.
 3. FLAPS ~ 26.5 DEG.
 4. μ ~ 0.3 DEG (P/C ND)
 5. FAT ~ 10.0 °C

PREPARED BY TCH & RSA
DATE 3/9/65
CHECKED BY JLP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE C-10

ADS EXTRACTION CHUTE TOW

TEST

MODEL C141A

AF63-8077

LAC 6008

FLIGHT 78

DATE 3/5/65

RUN 4

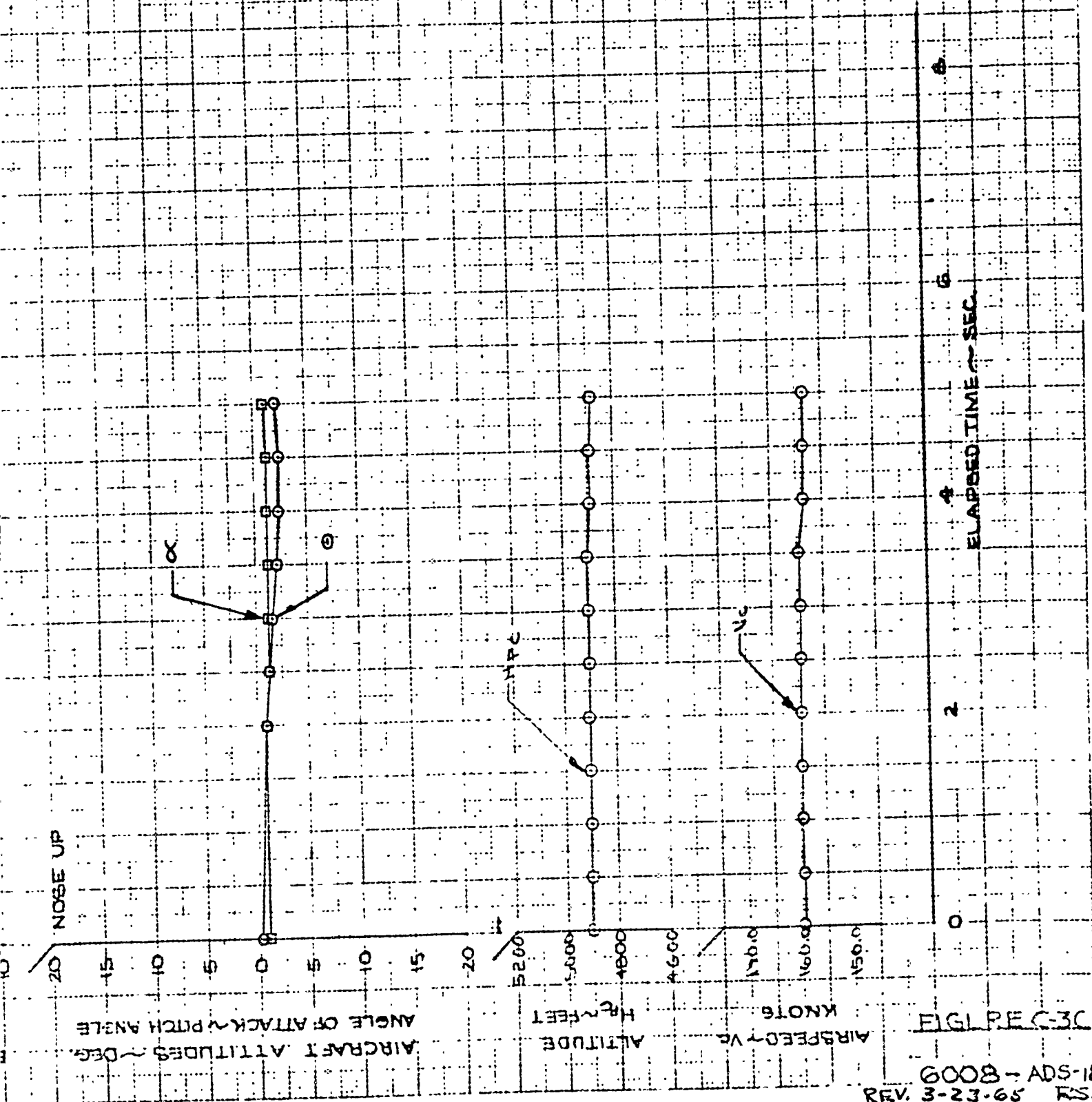
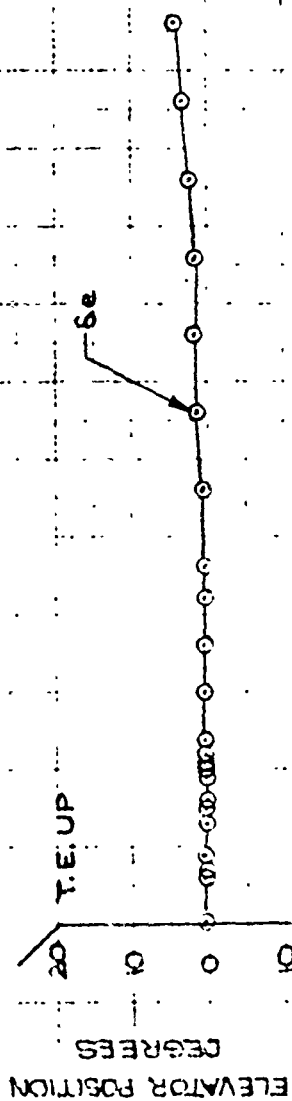
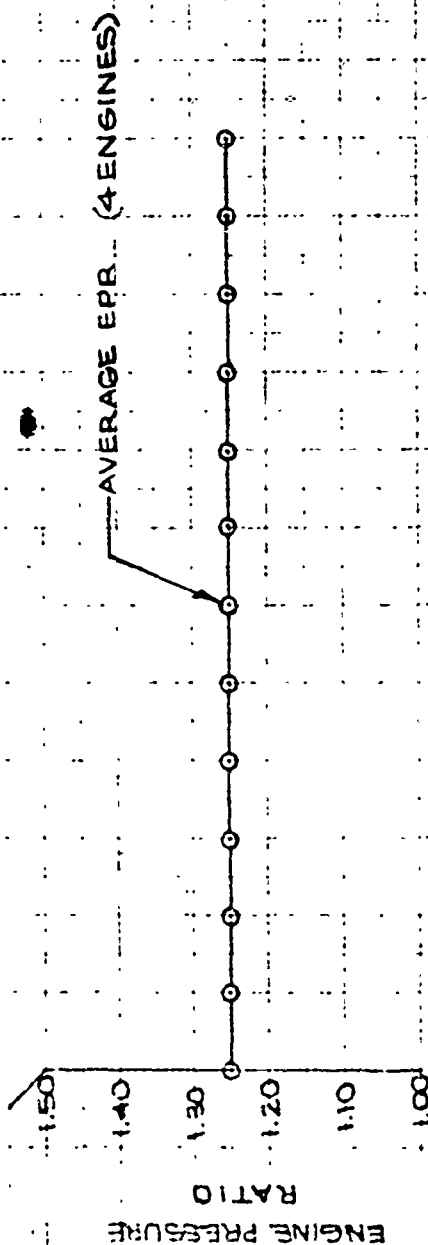
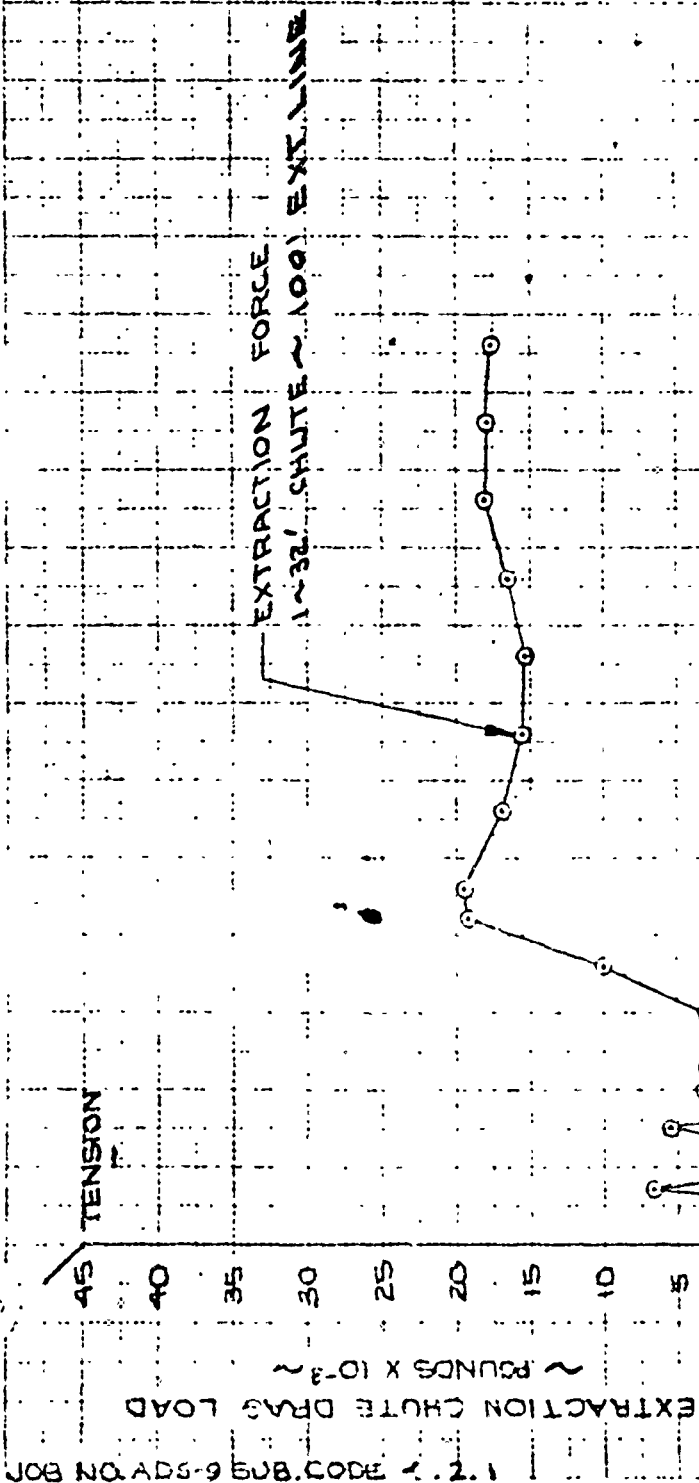


FIGURE 3C

6008-ADS-18
REV. 3-23-65 RSA

6008-AD5-14



NOTE:

1. GW ~ 190,000 LBS. (APPROX)
2. CG ~ NA
3. FLAPS ~ 35°
4. H ~ 2.2° (A/C NU)
5. FAT ~ 7°C

PREPARED BY **TED**
 DATE **3-9-65**
 APPROVED BY *[Signature]*

CHECKED FOR DATA AND
 CORRECTIONS BY *[Signature]*

REPORT NO. **ER 5473-**
 MODEL **C-141A**
 C-11

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**
AF63-8077 LAC 6008
FLIGHT 76 DATE 3-8-65

RUN 4

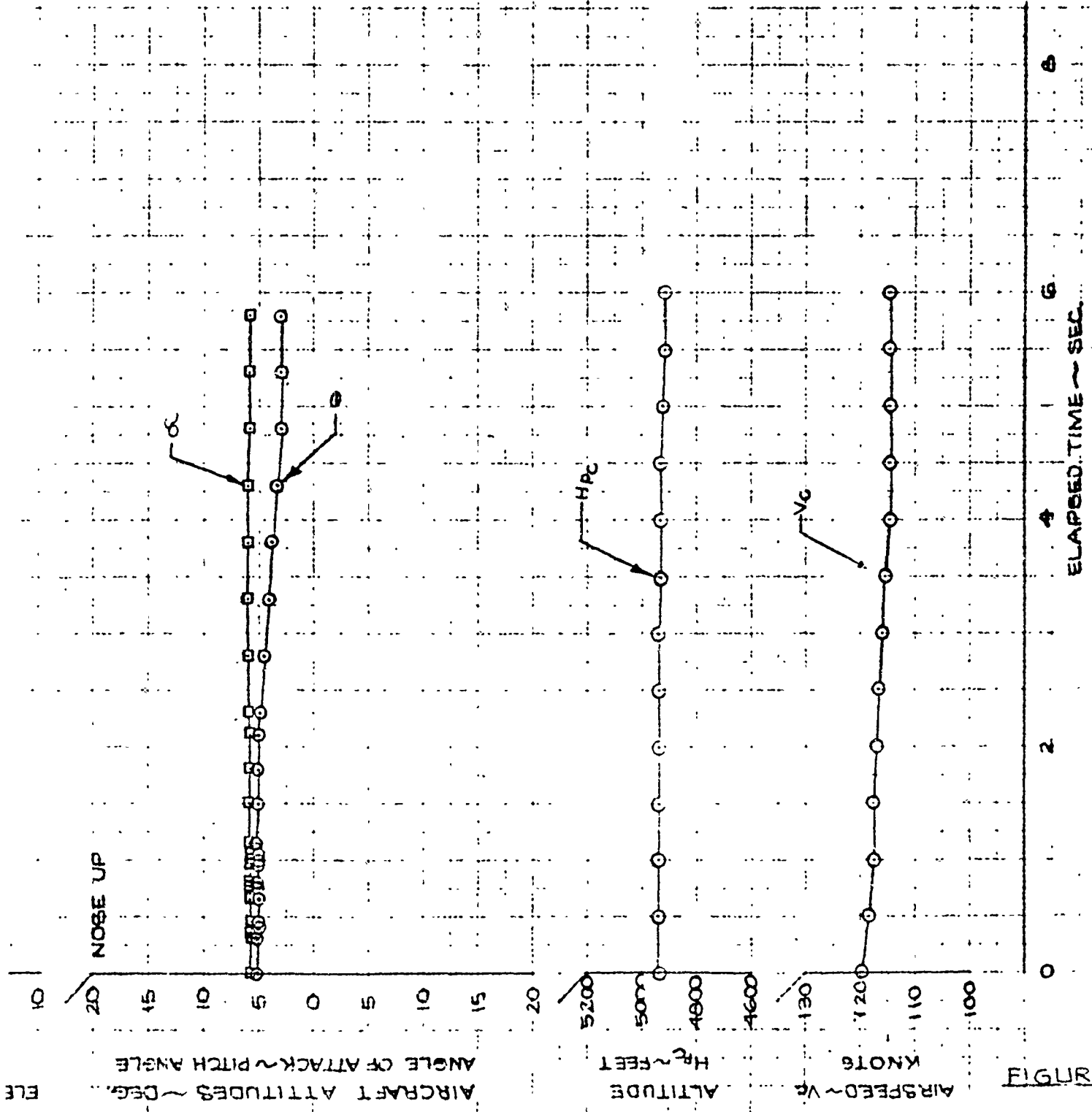
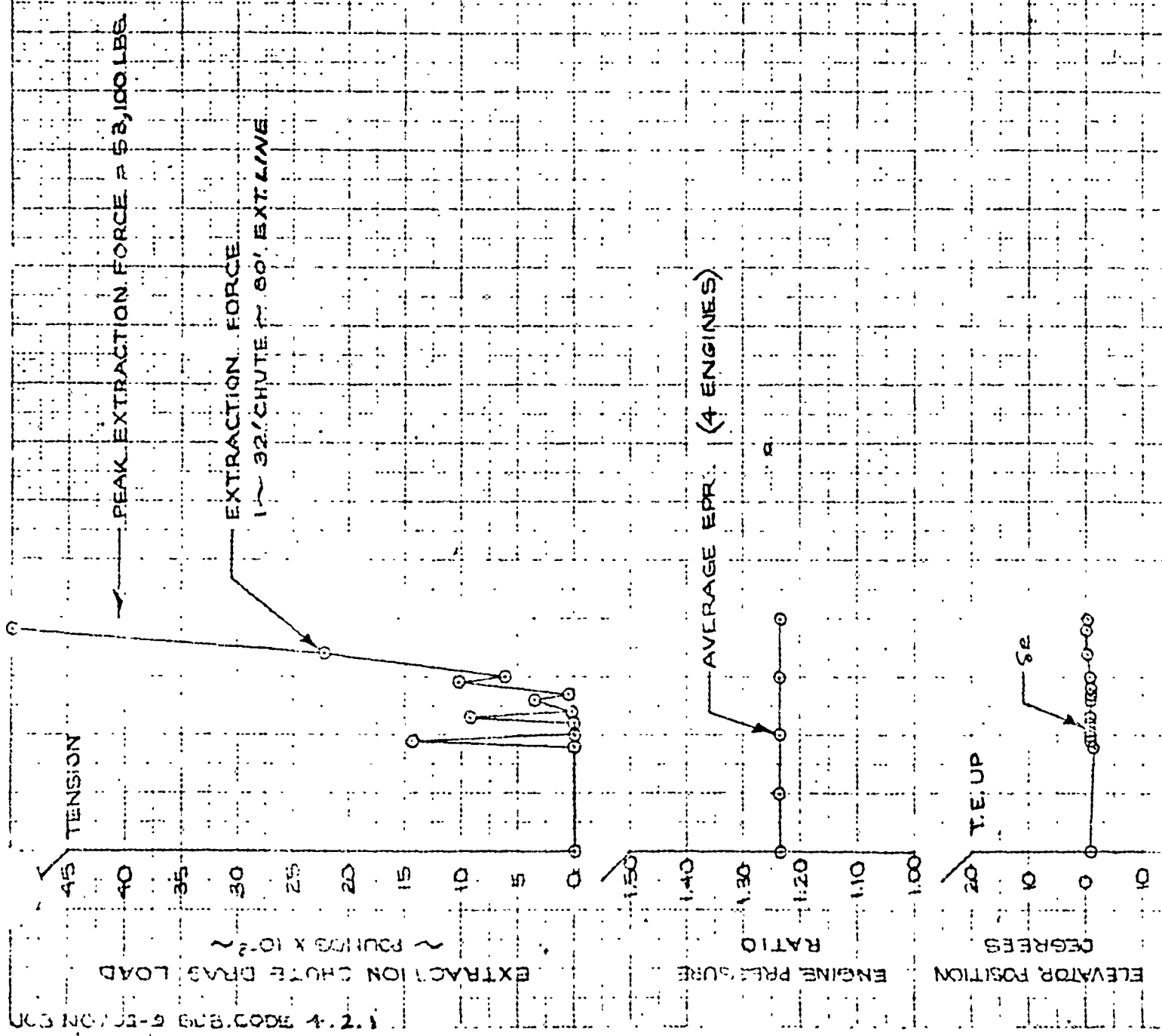


FIGURE C-4A

6008-ADS-14
 REVISED 12-8-65 MBM
 REV. 3-23-65 RGA

6008-1-16



PREPARED BY FCW

DATE 3-10-64

CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO

ER 5473

MODEL

C-141A

PAGE

C-12

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AFG3-8077

LAC 6008

FLIGHT 76

DATE 3-8-65

RUN 6

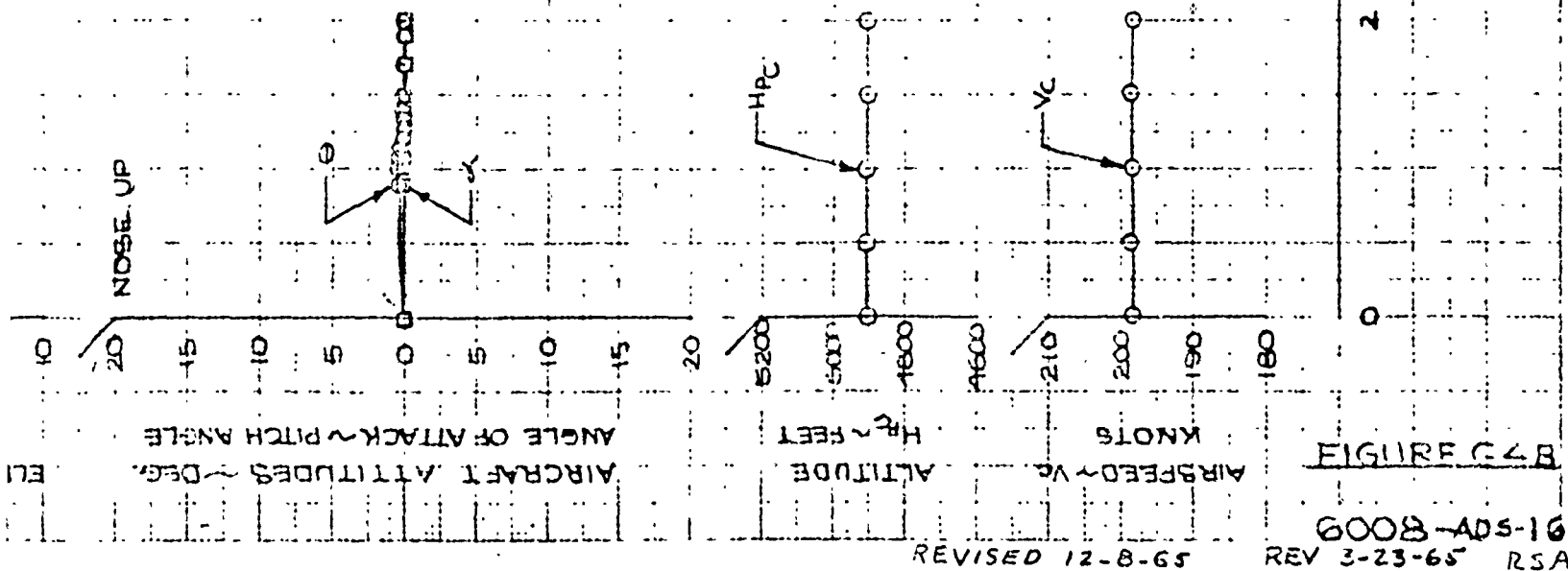


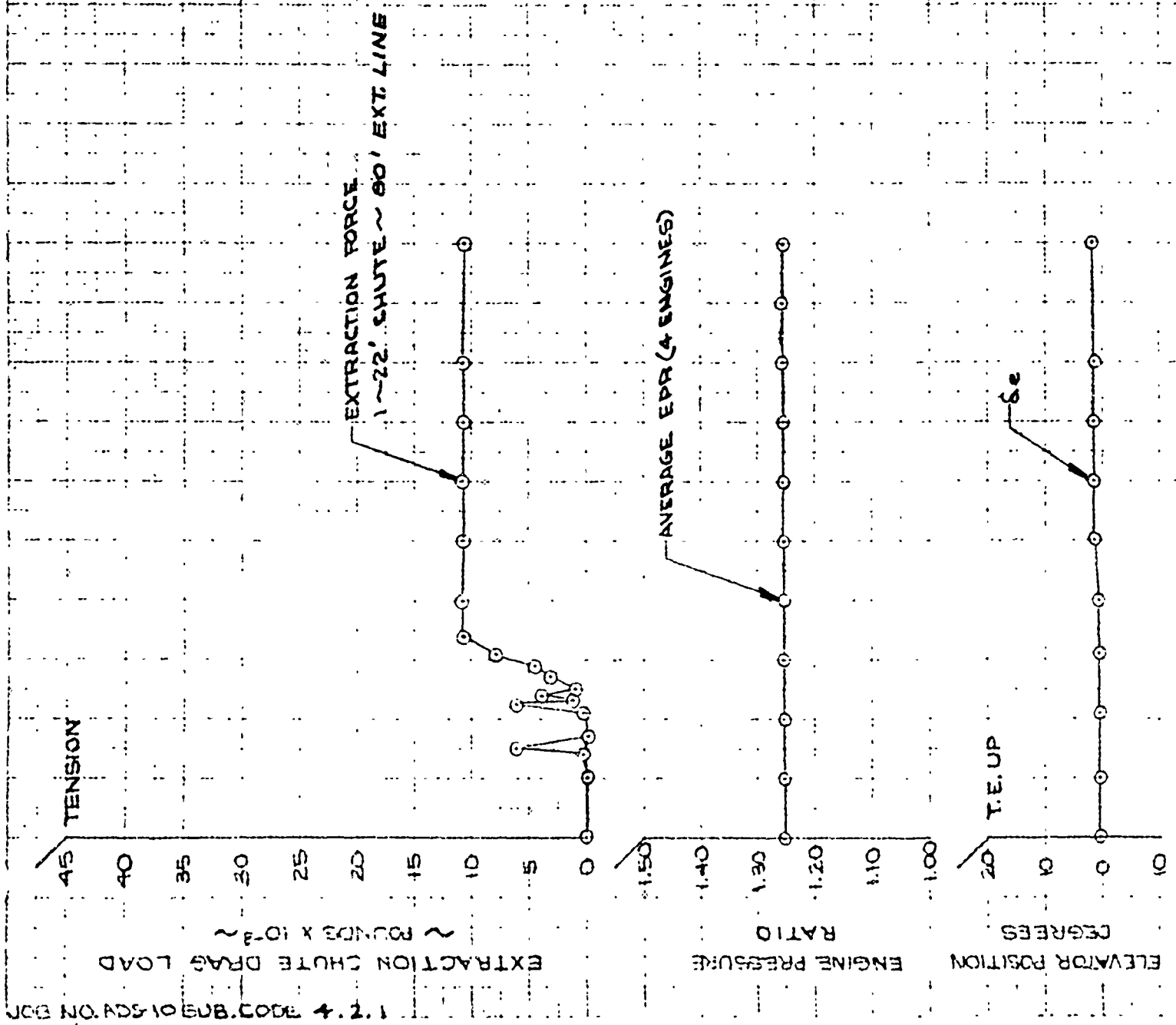
FIGURE C7B

6008-ADS-16

REVISED 12-8-65

REV 3-23-65 RSA

6008-ADS-19



1.2.4 3003 B90150N BON JOB NO ADS 10 SUB CODE 4.2.1

PREPARED BY: TED
 DATE: 3-18-66
 CHECKED BY: JUP

LOCKHEED GEORGIA COMPANY
 DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO: ER 5473
 MODEL: C-141A
 PAGE: C-13

ADS EXTRACTION CHUTE TOW TEST

MODEL: C141A
 AF63-8072 LAC 6008
 FLIGHT 80 DATE 3-11-65

RUN 2

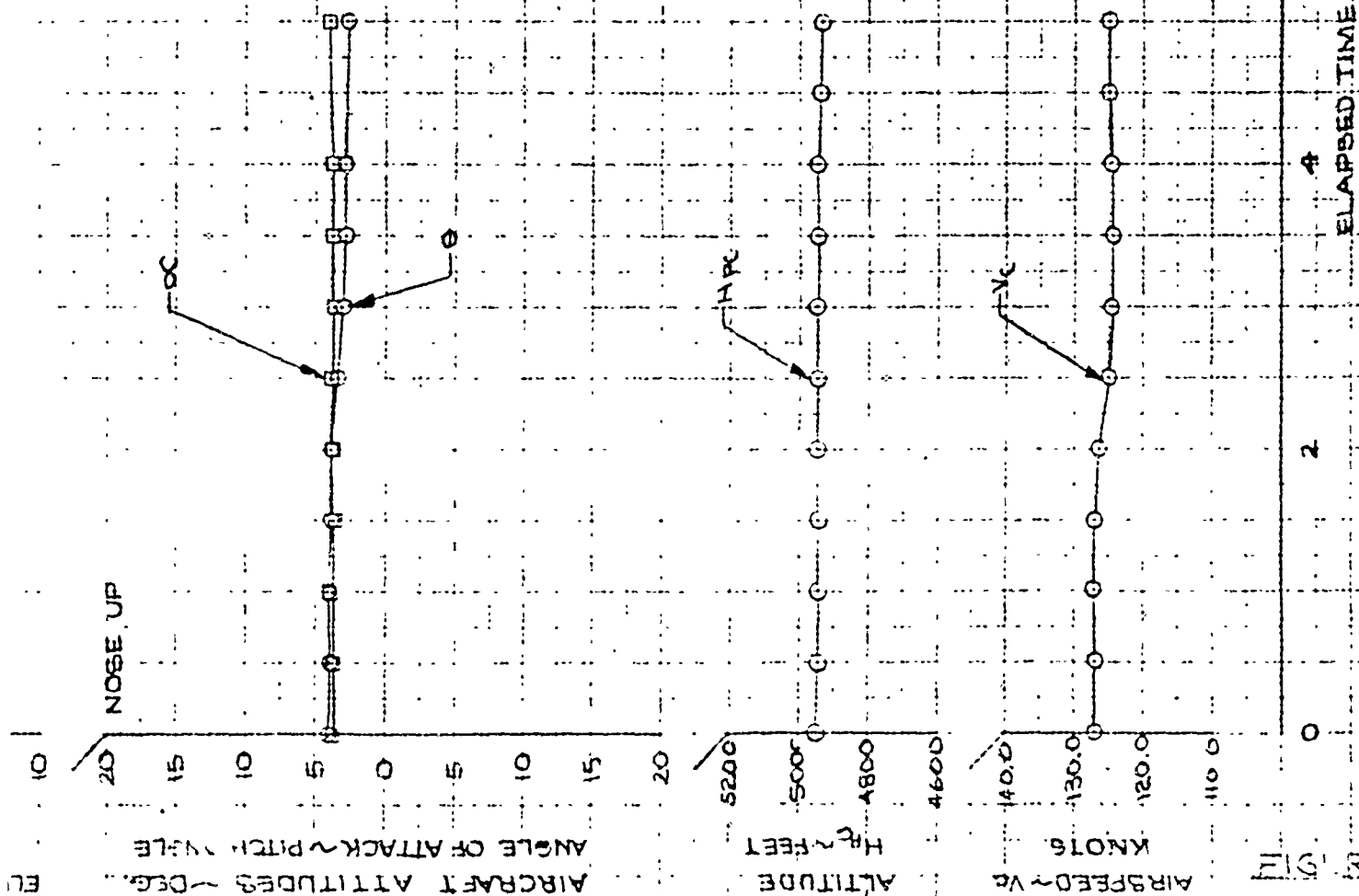
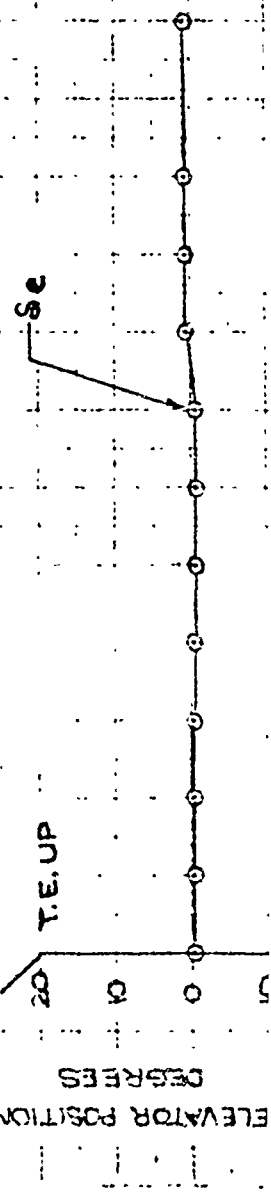
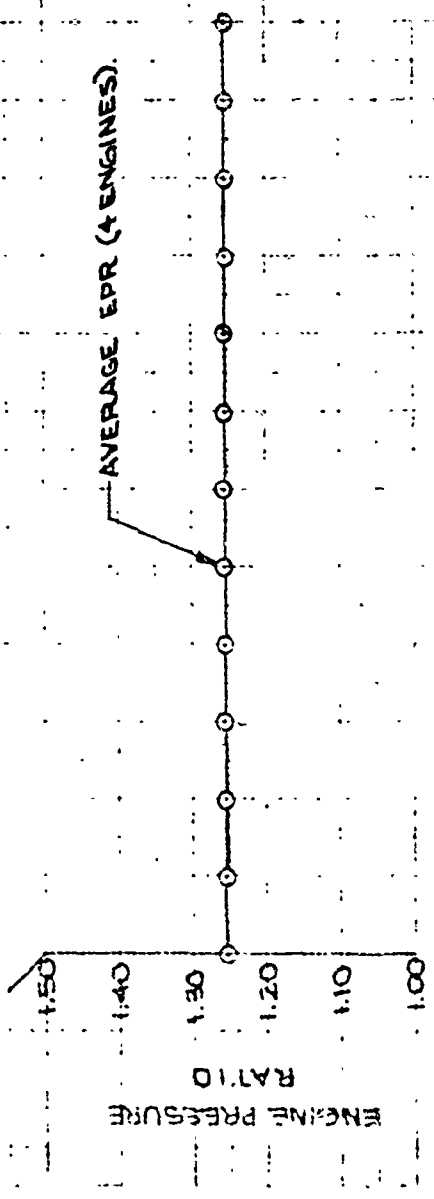
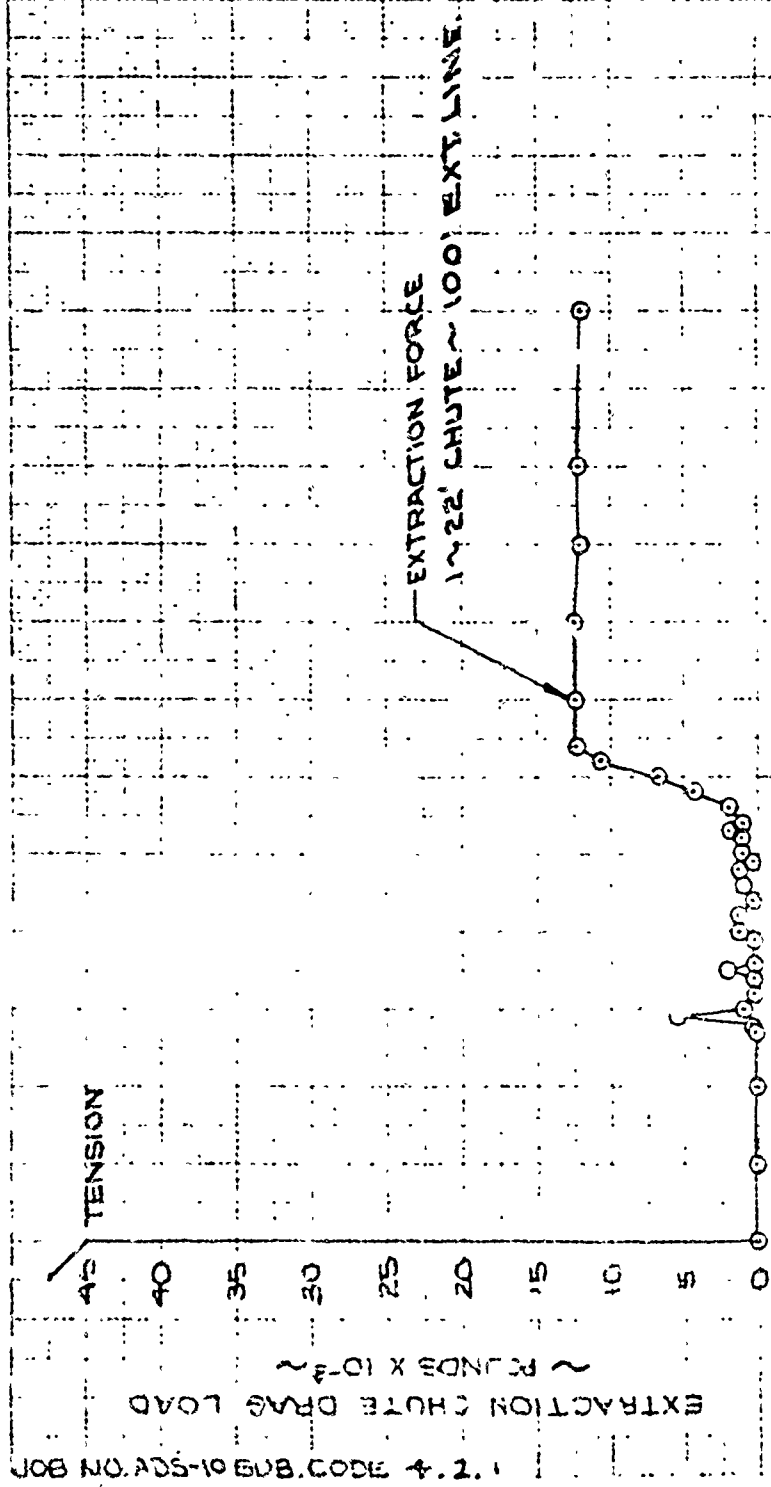


FIGURE 15

6008-ADS-10
 REVISED 12-8-65
 MBH

GODB-ADS-20



NOTE:

1. G.W. ~ 165,000 LBS (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 29 DEG
4. LH ~ 1.3 DEG (NCL J.)
5. FAT ~ 11.0 °C

PREPARED BY T.E.D.
 DATE 3-18-65
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIR RESEARCH CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE C-14

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 80 DATE 3-17-65

RUN 3

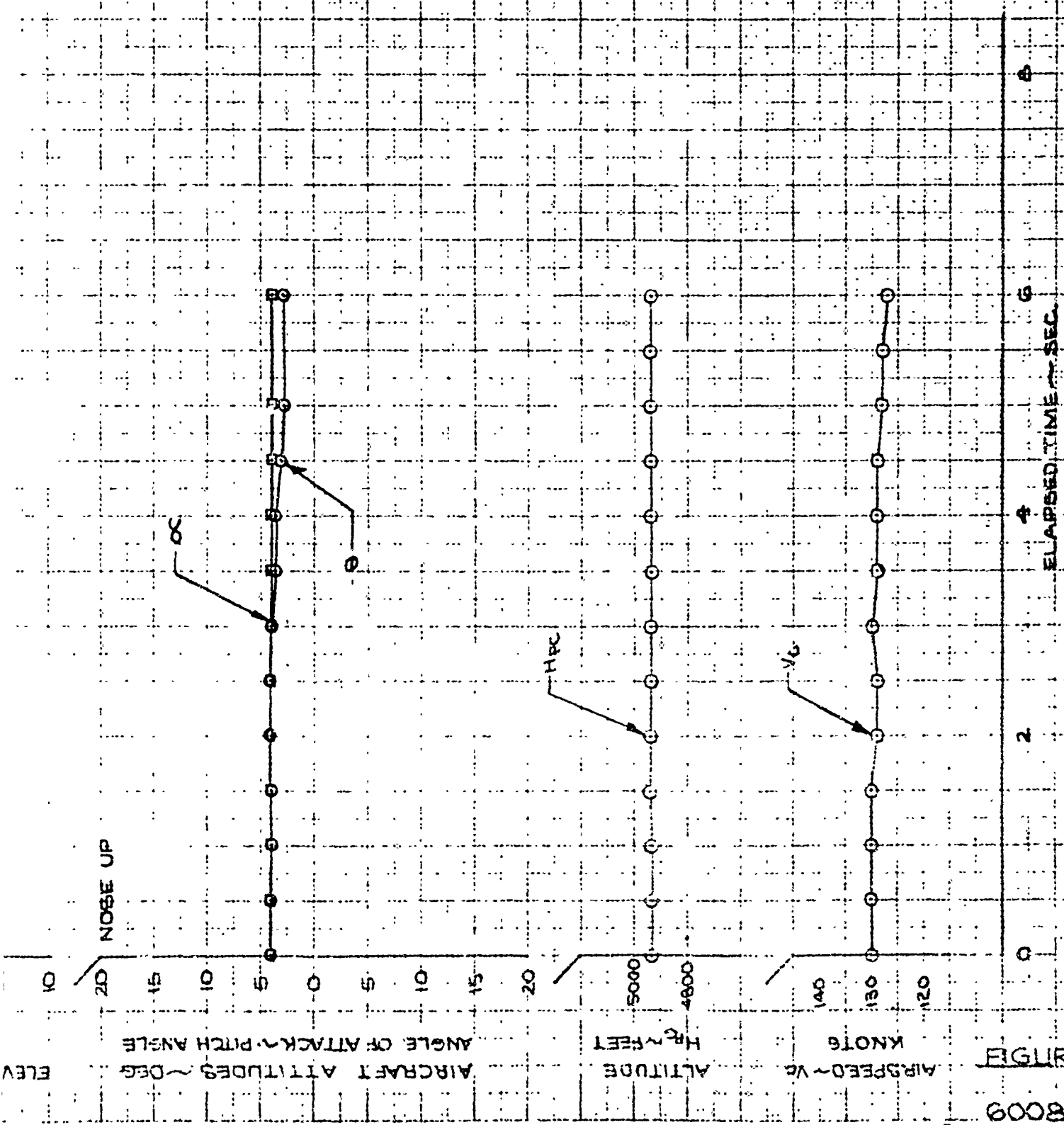


FIGURE C-5B

6008-ADS-20
 REVISED 12-8-65
 MBN

GOUB-ADS21

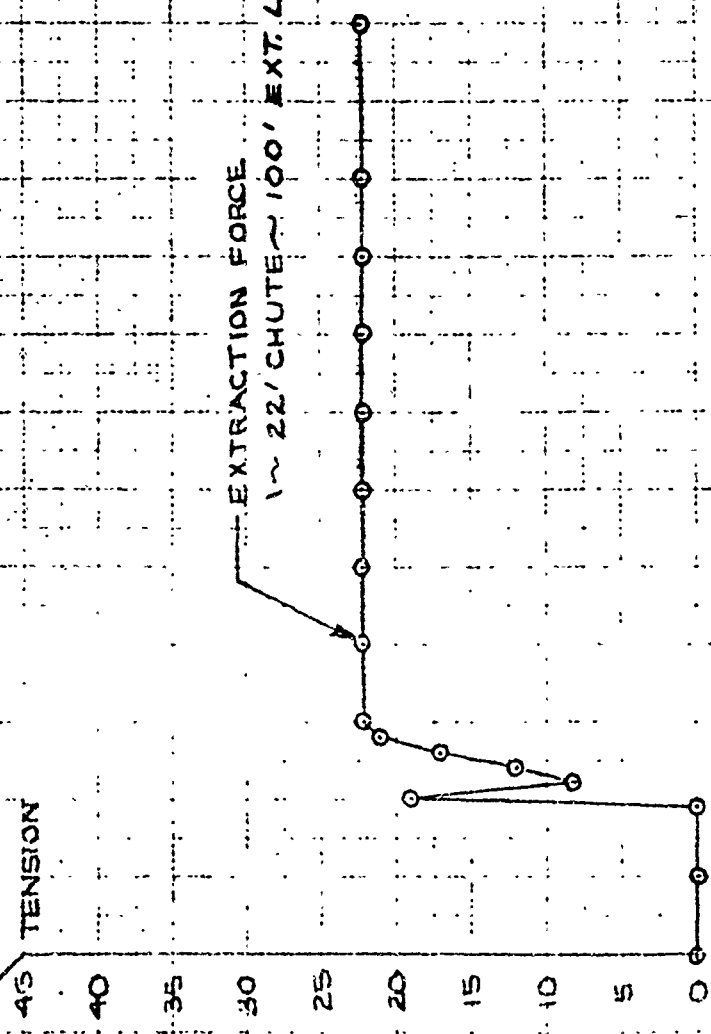
1.7.4 7003.8901-540N BOB

TENSION

EXTRACTION CHUTE DRAG LOAD

~ POUNDS X 10⁻² ~

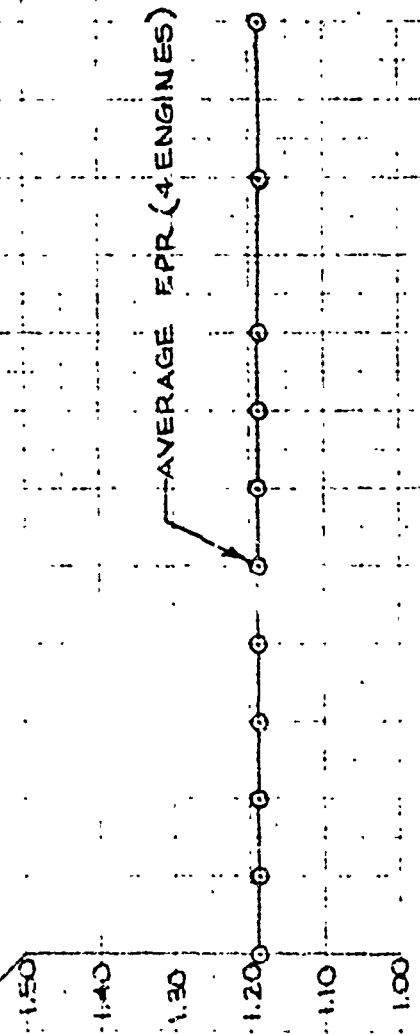
EXTRACTION FORCE
~ 22' CHUTE ~ 100' EXT. LINE



ENGINE PRESSURE

RATIO

AVERAGE EPR (4 ENGINES)

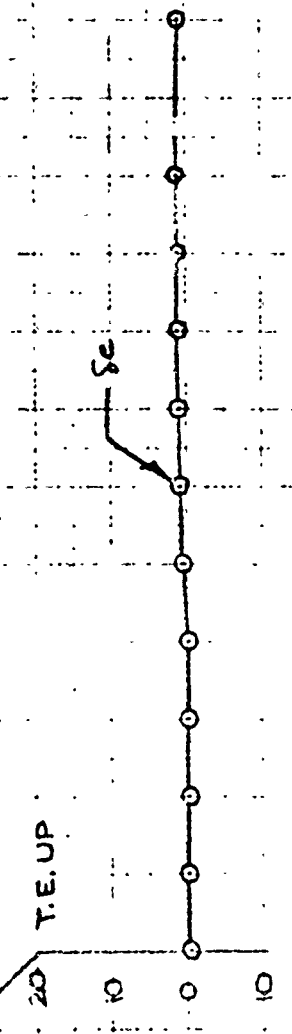


ELEVATOR POSITION

DEGREES

T.E. UP

8c



NOTE:

1. G.W. ~ 180,000 LBS. (APPROX)
2. C.G. ~ NA
3. FLAPS ~ 24 DEG.
4. IH ~ 0.3 (A/C ND)
5. FAT ~ 13°C

PREPARED BY FCW
 DATE 3-19-65
 CHECKED BY *FW*

LOCKHEED GEORGIA COMPANY
 DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE C-15

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AFG3-B077 LAC 6008
 FLIGHT 80 DATE 3-17-65

RUN 4

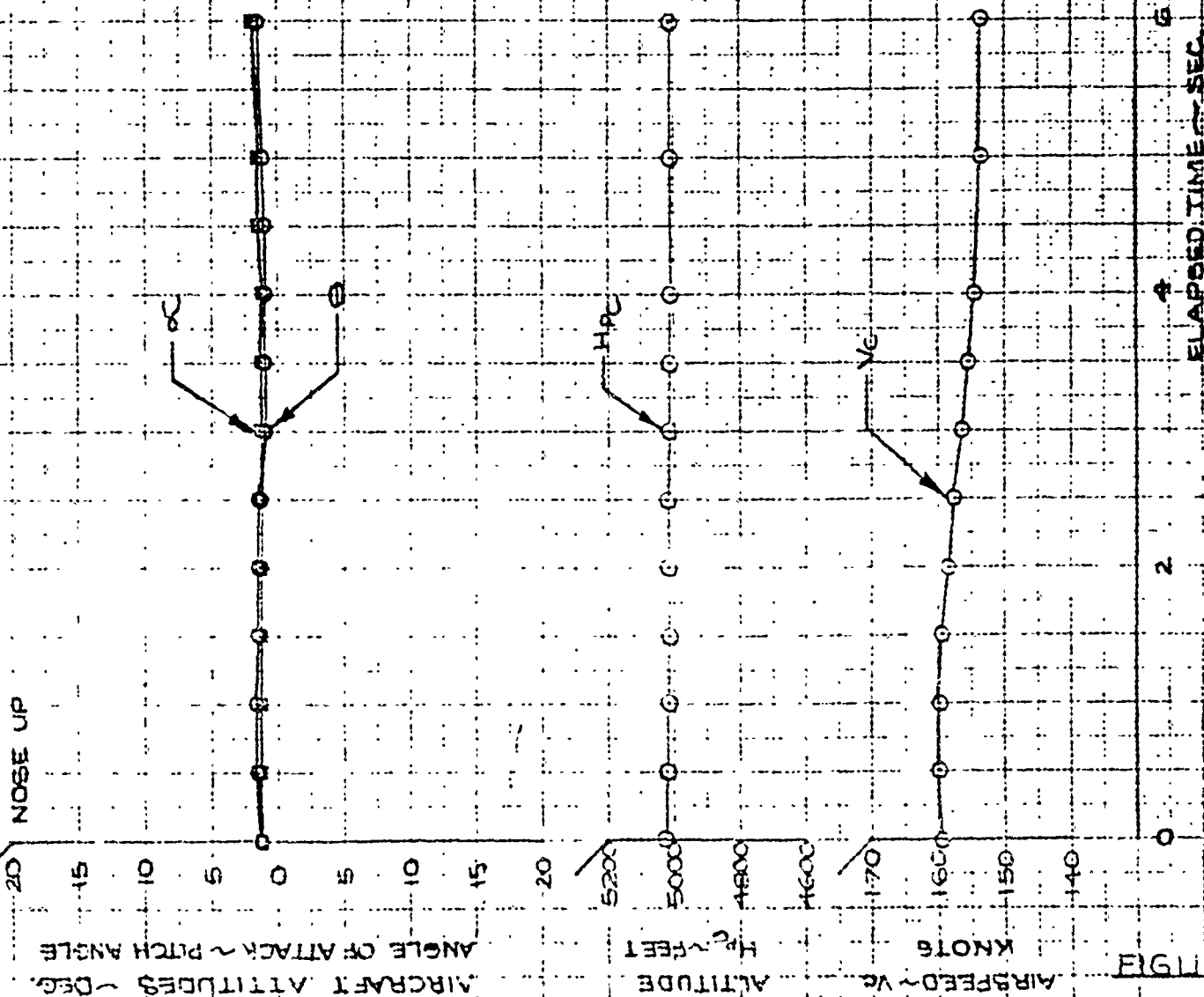
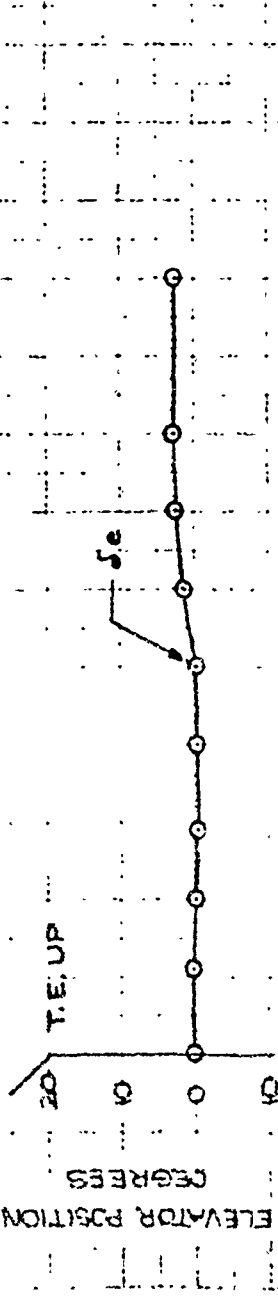
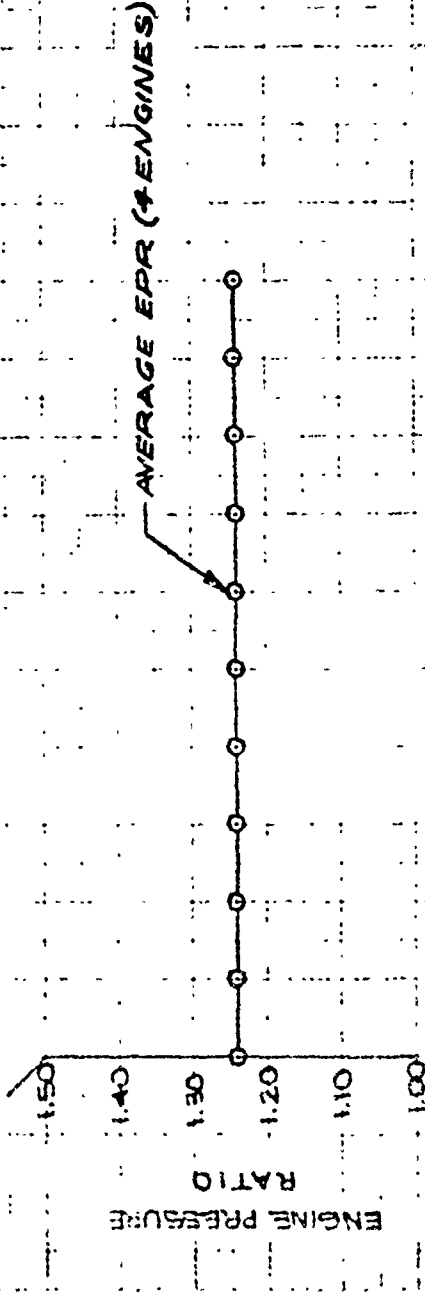
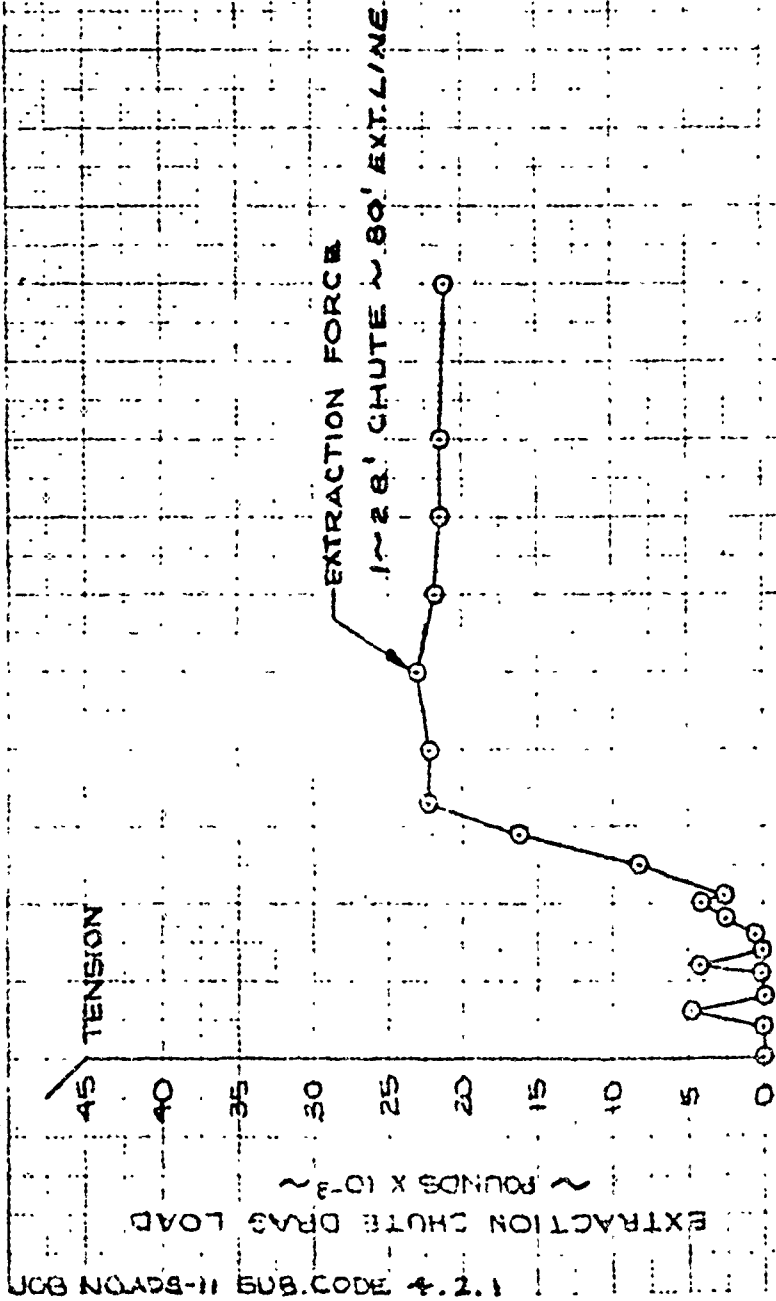


FIGURE C-15

6008-A-21
 REVISED 12-8-65
 MSH

6008-AD523



NOTE:
 LGW ~ 190,000 LBS (APPROX)
 2 CG ~ N/A
 3 FLAPS ~ 28 DEG.
 4.4H ~ 0.8 DEG (A/C NUL)
 5. FAT ~ 10 °C

PREPARED BY: **RSA**
 DATE: **3-19-65**
 CHECKED BY: **4-5**

LOCKHEED GEORGIA COMPANY
 DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO: **ER 5473**
 MODEL: **C-141A**
 PAGE: **C-16**

ADS EXTRACTION CHUTE TOW TEST

MODEL: **C141A**
 AFG3-8072 LAC 6008
 FLIGHT 81 DATE: **3-18-64**

RUN 3

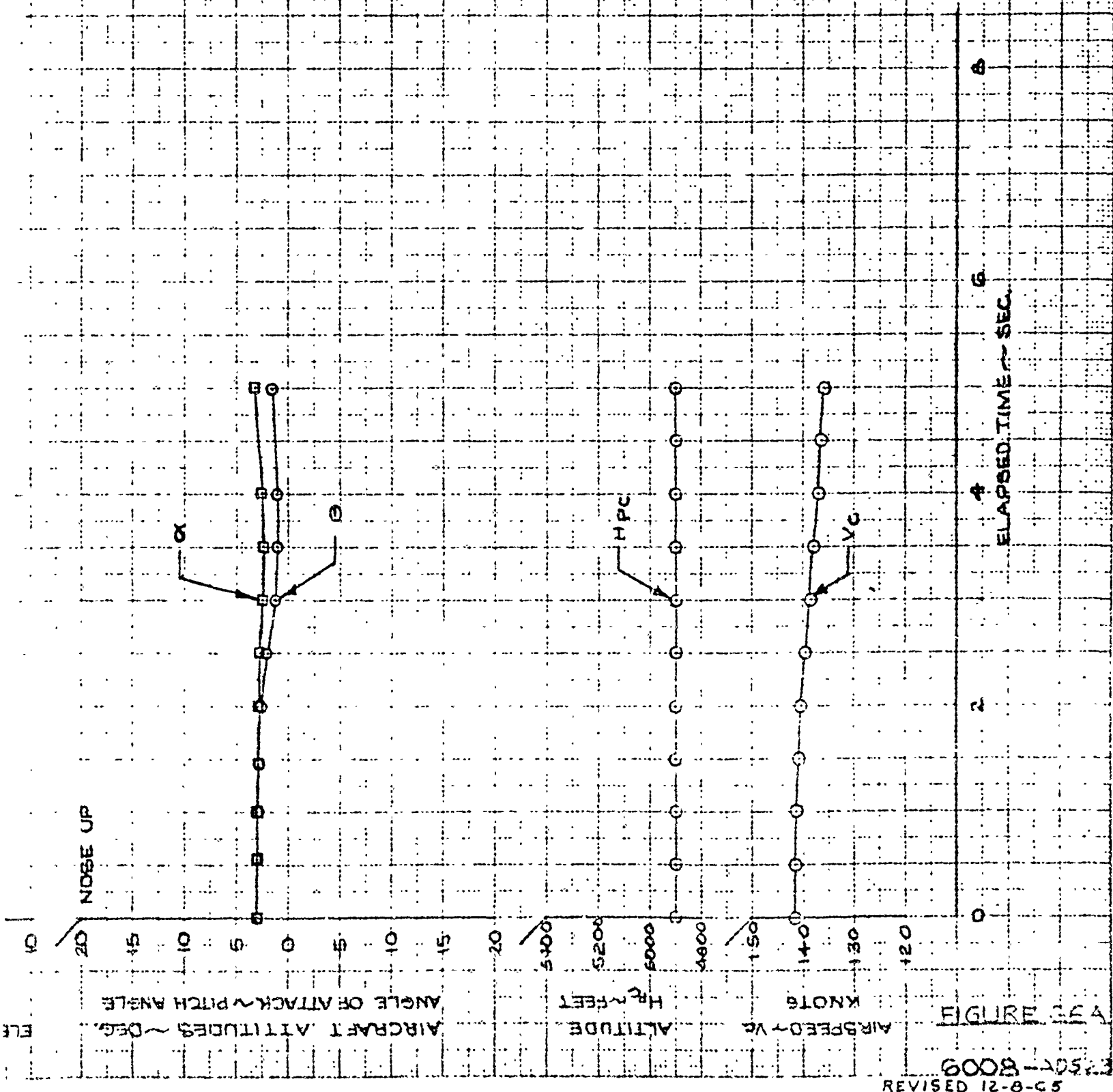
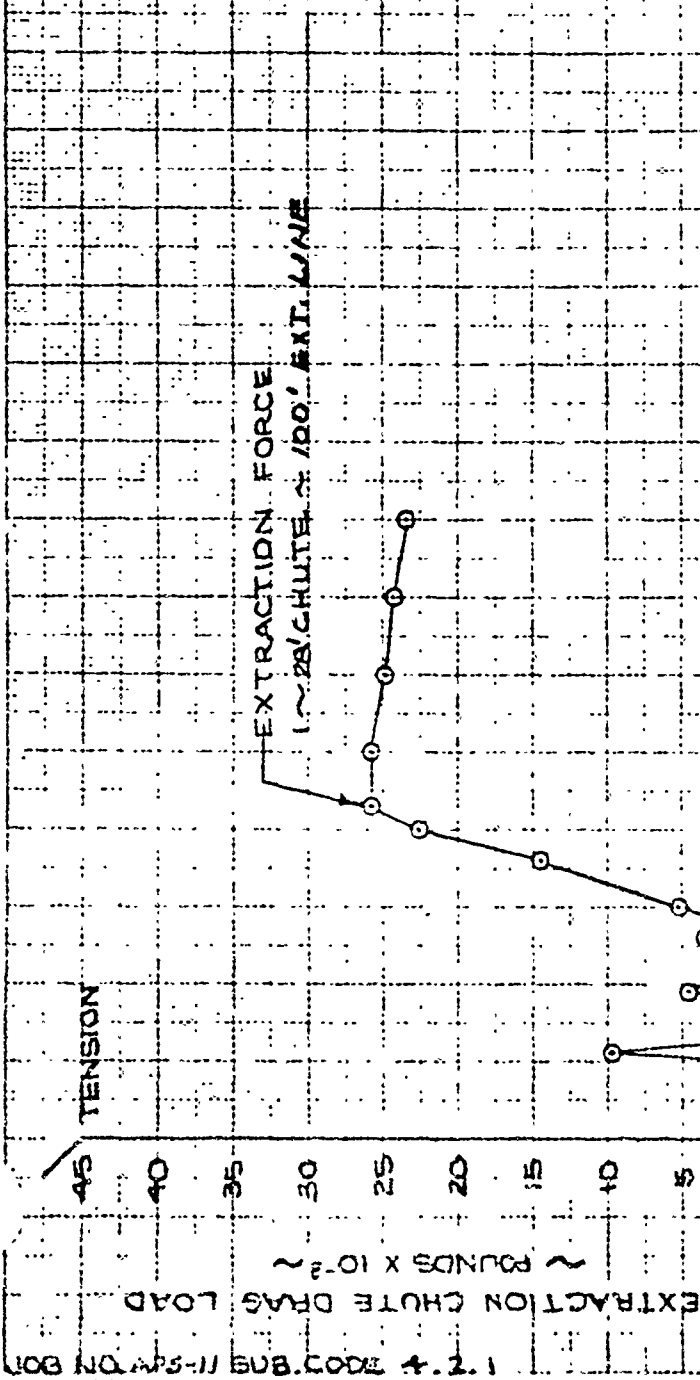


FIGURE 3A

6008-80523

REVISED 12-8-65

GOODS TADS 2H



PREPARED BY: FCW
 DATE: 3-18-65
 CHECKED BY: JWF

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO: ER 5473
 MODEL: C-141A
 PAGE: C-17

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AF63-8077 LAC 6008
 FLIGHT 811 DATE 3-18-65

RUN 4

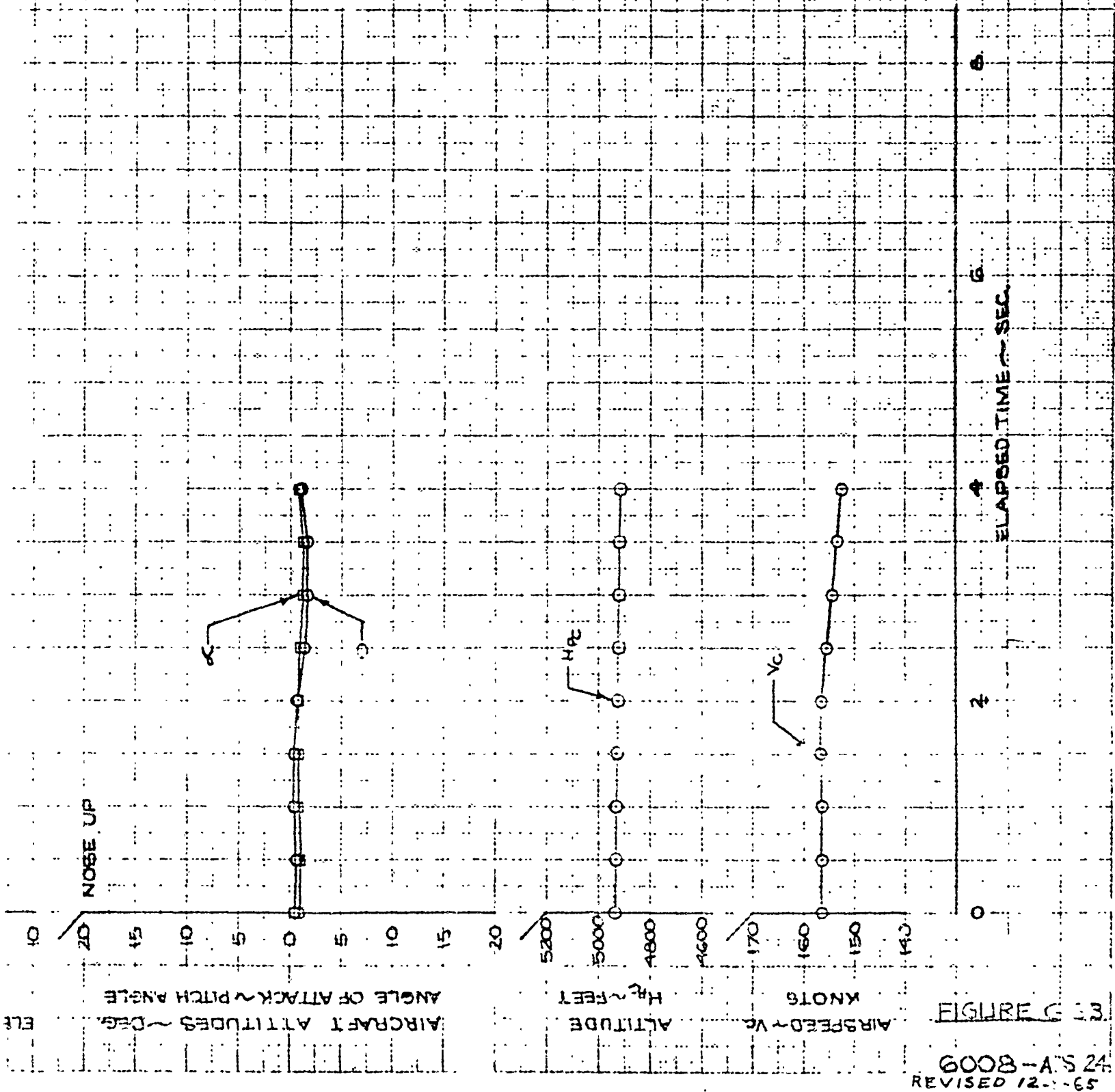
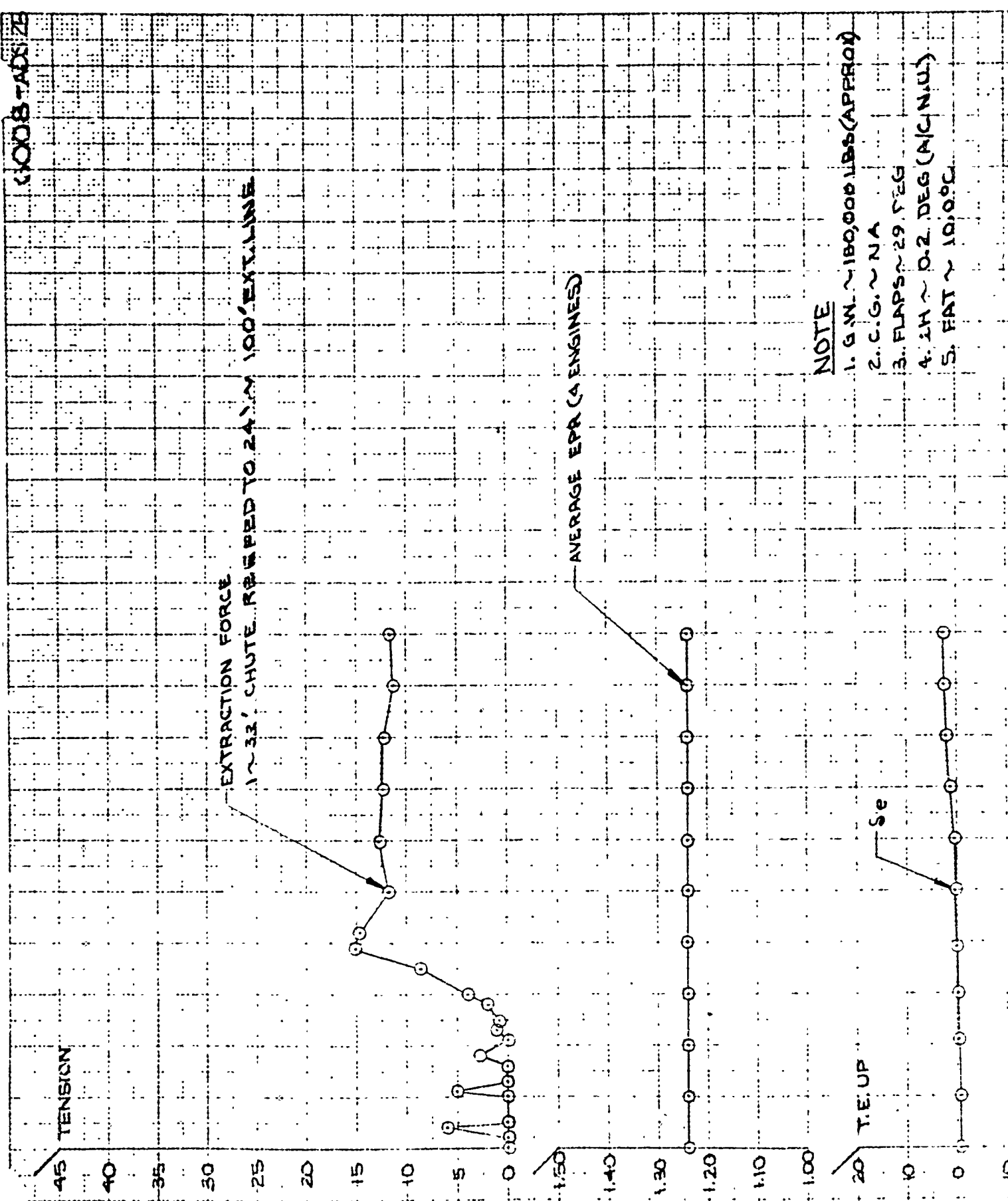


FIGURE C-13

6008-A'S 24
 REVISED 12-1-65

EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³



PREPARED BY TED.
 DATE 3-19-65
 CHECKED BY fw

LOCKHEED GEORGIA COMPANY
 DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE C-18

ADS EXTRACTION CHUTE TOW

TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 81 DATE 3-18-65

RUN 5

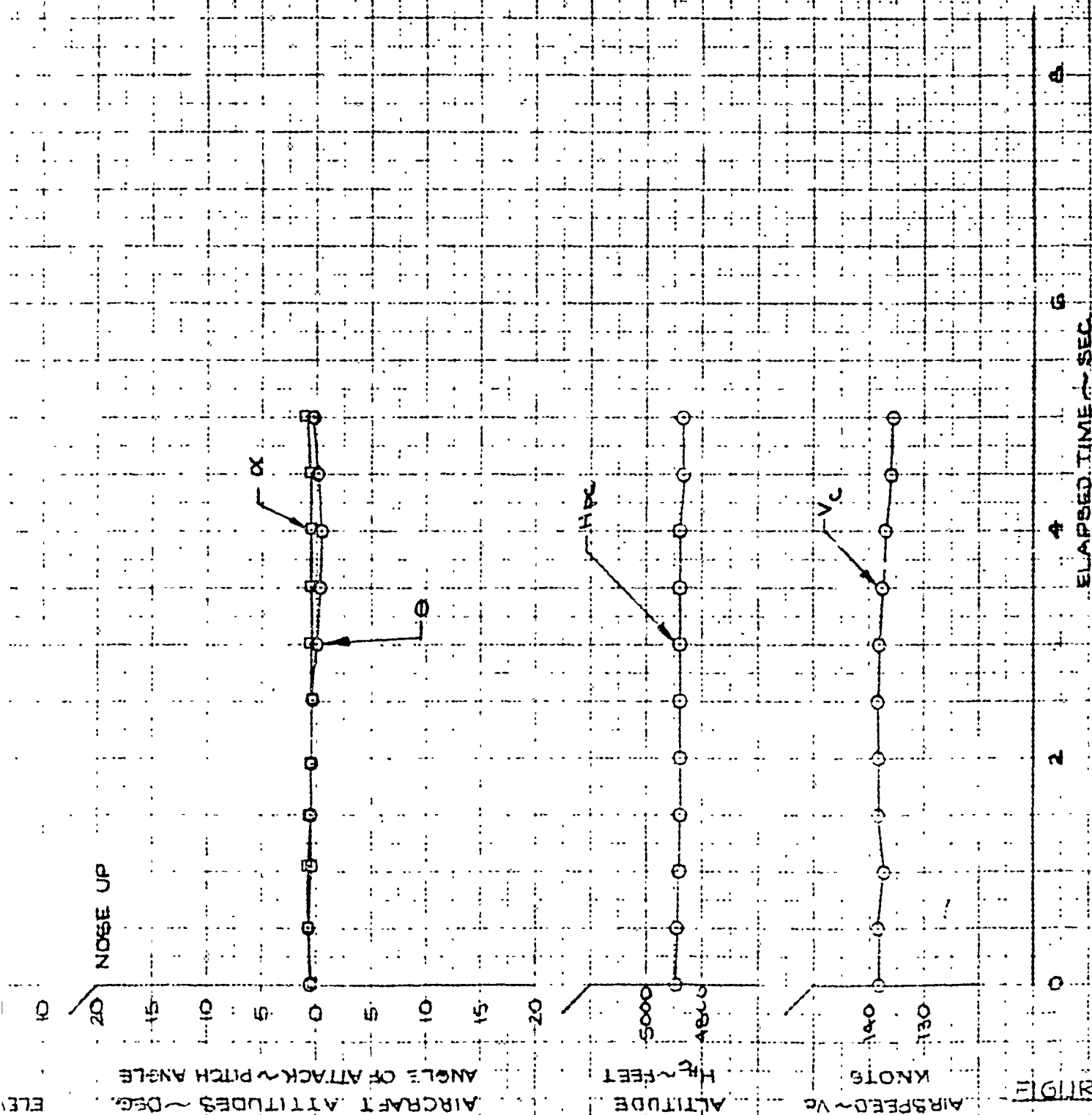
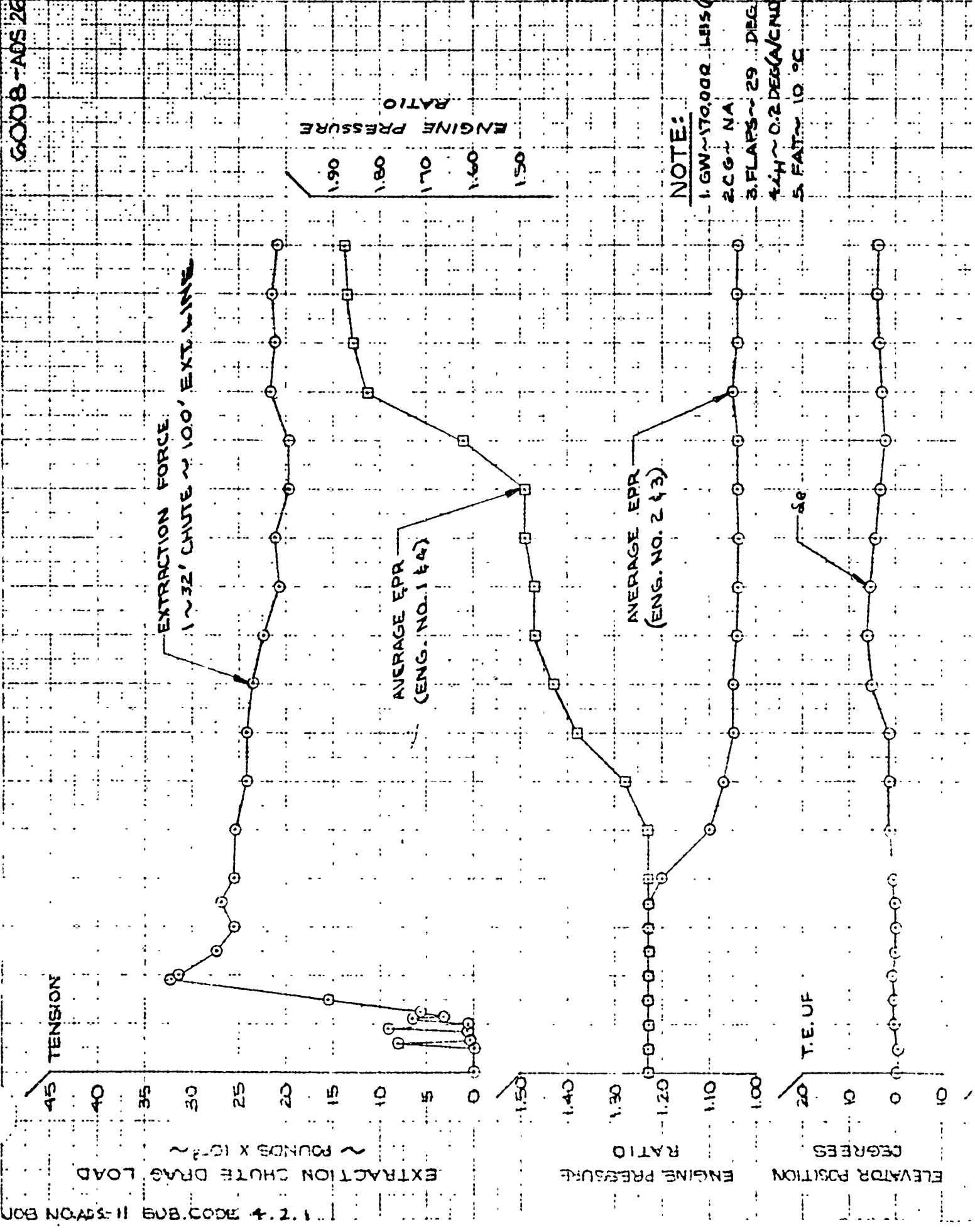


FIGURE C-18

6008-A13-25

1.2.4 CODE 809 11-37-00 BON

GOOB-A05 28



PREPARED BY: **TED**
 DATE: **3-19-65**
 CHECKED BY: *[Signature]*

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO: **ER 5473**
 MODEL: **C-141A**
 PAGE: **C-19**

ADS EXTRACTION CHUTE TOW TEST

MODEL: **C141A**
 AF63-8077 LAC 6008
 FLIGHT 81 DATE: **3-18-65**

RUN 6

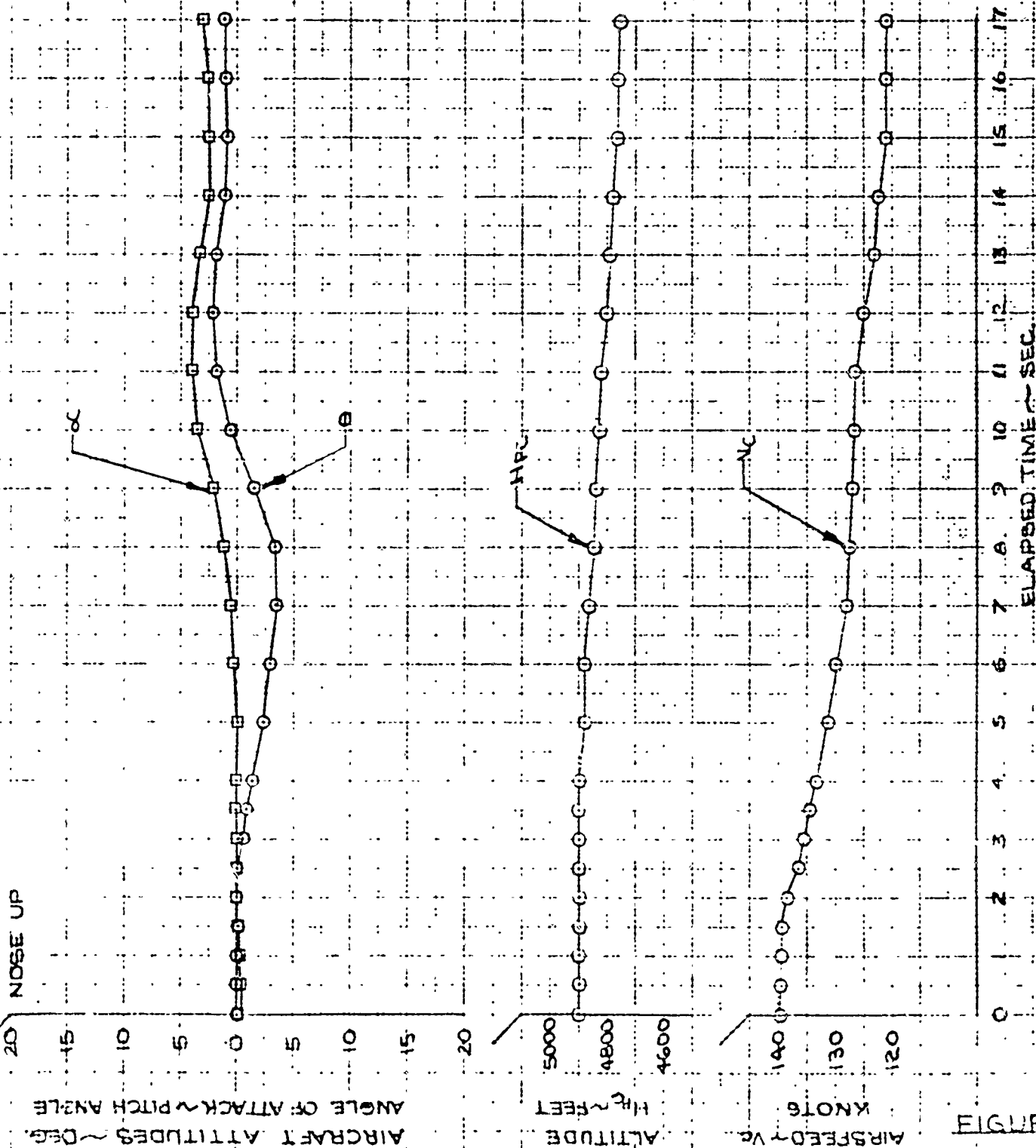
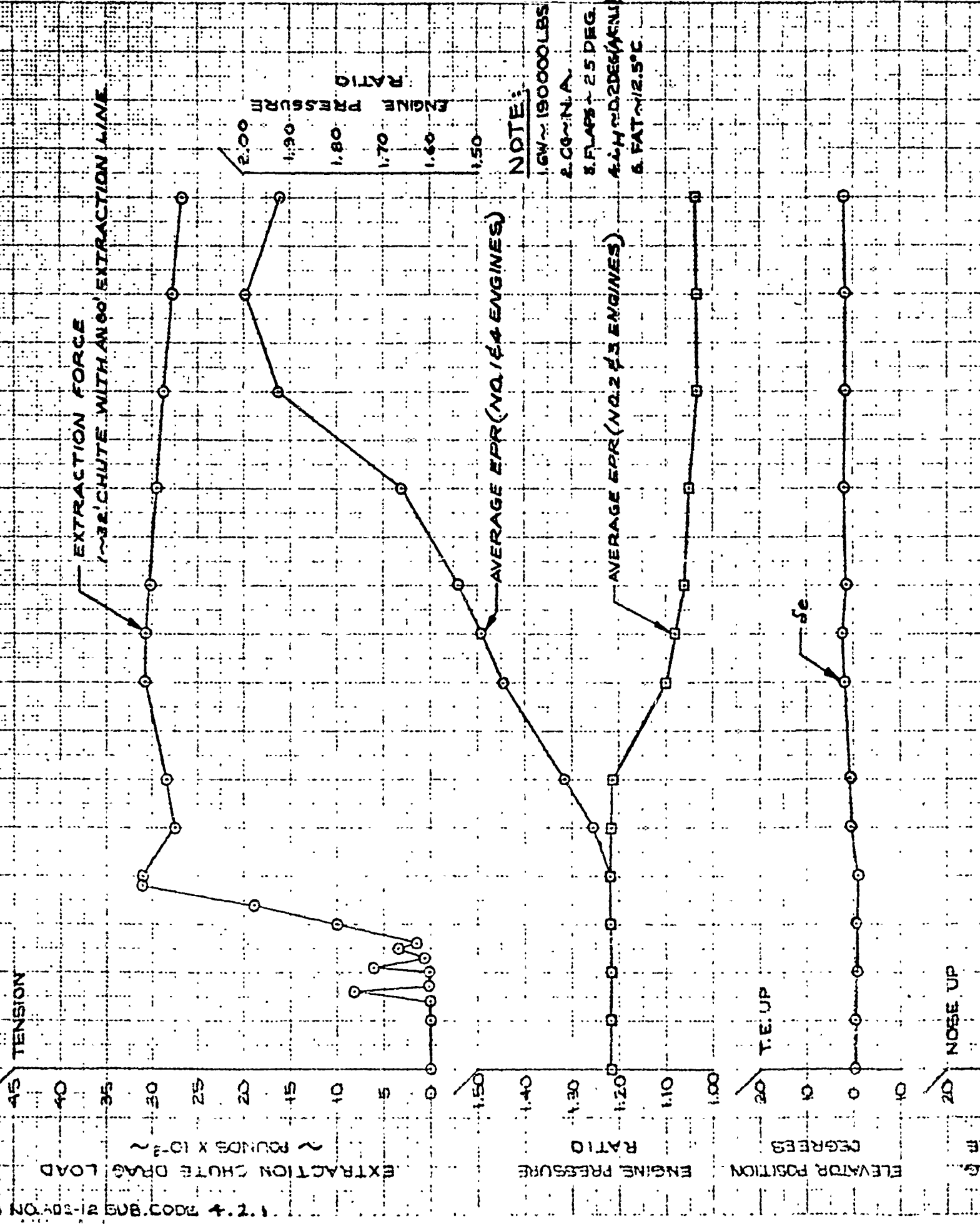


FIGURE C-19

6008-AIS 5

REVISED 12-8-61



PREPARED BY **RSA**
 DATE **3-22-65**
 CHECKED BY **SWP**

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **C-20**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**
AF63-8077 **LAC 6008**
FLIGHT 83 **DATE 3-19-65**

RUN 2

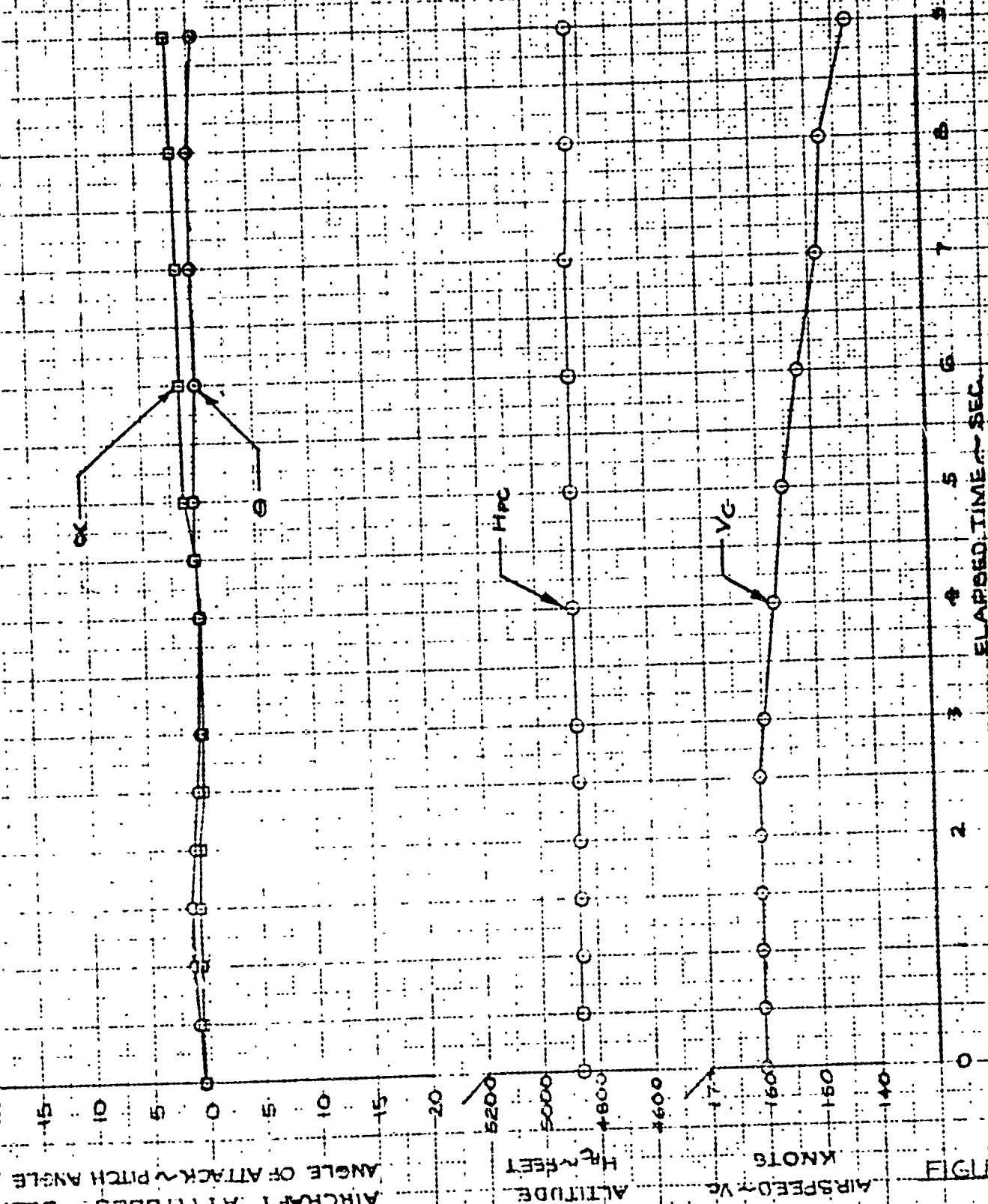
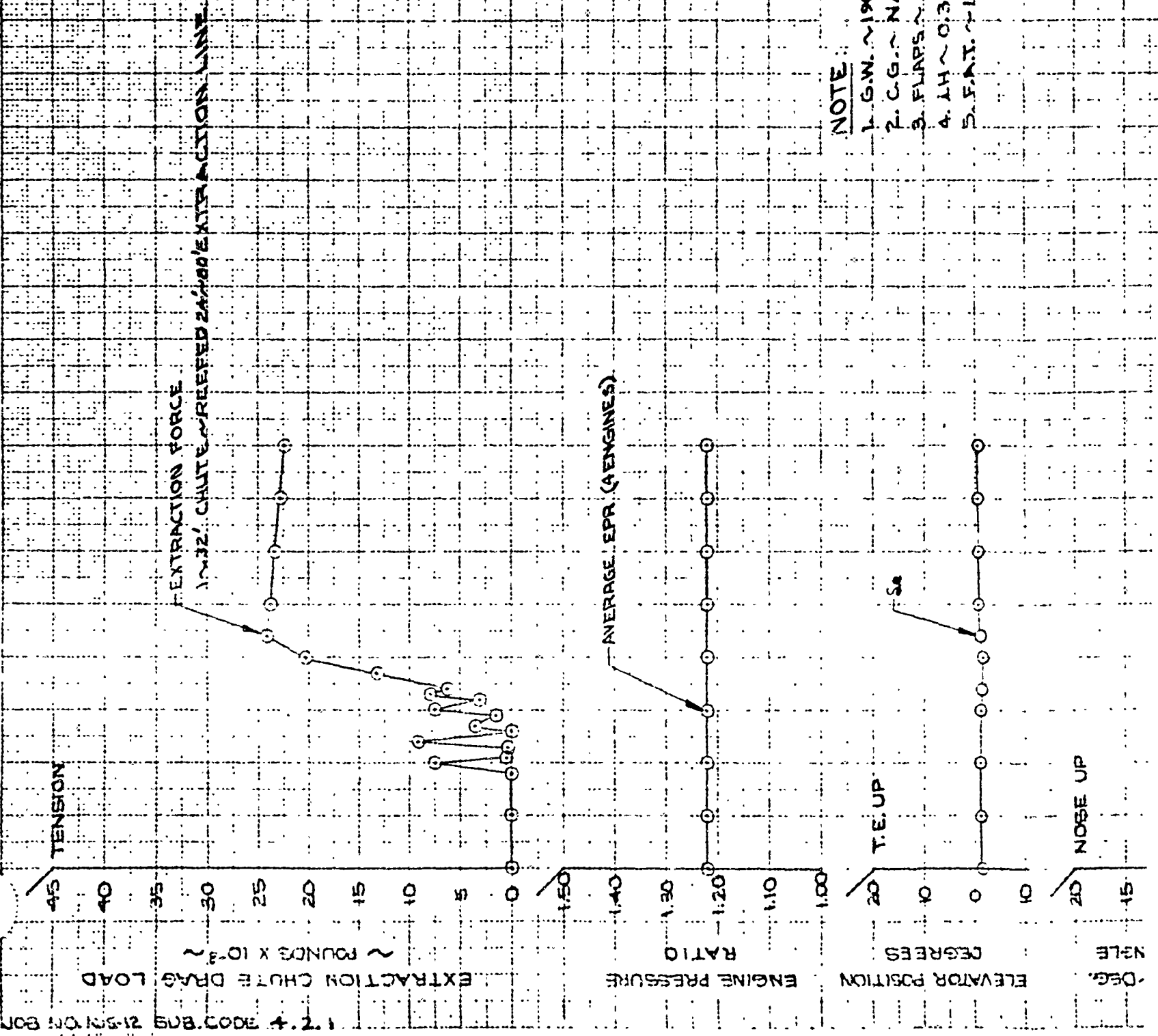


FIGURE 7A

6008-2528
 REVISED 12-8-55 MK



PREPARED BY T.E.D.
DATE 3-22-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE C-21

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT 83 DATE 3-19-65

RUN 3

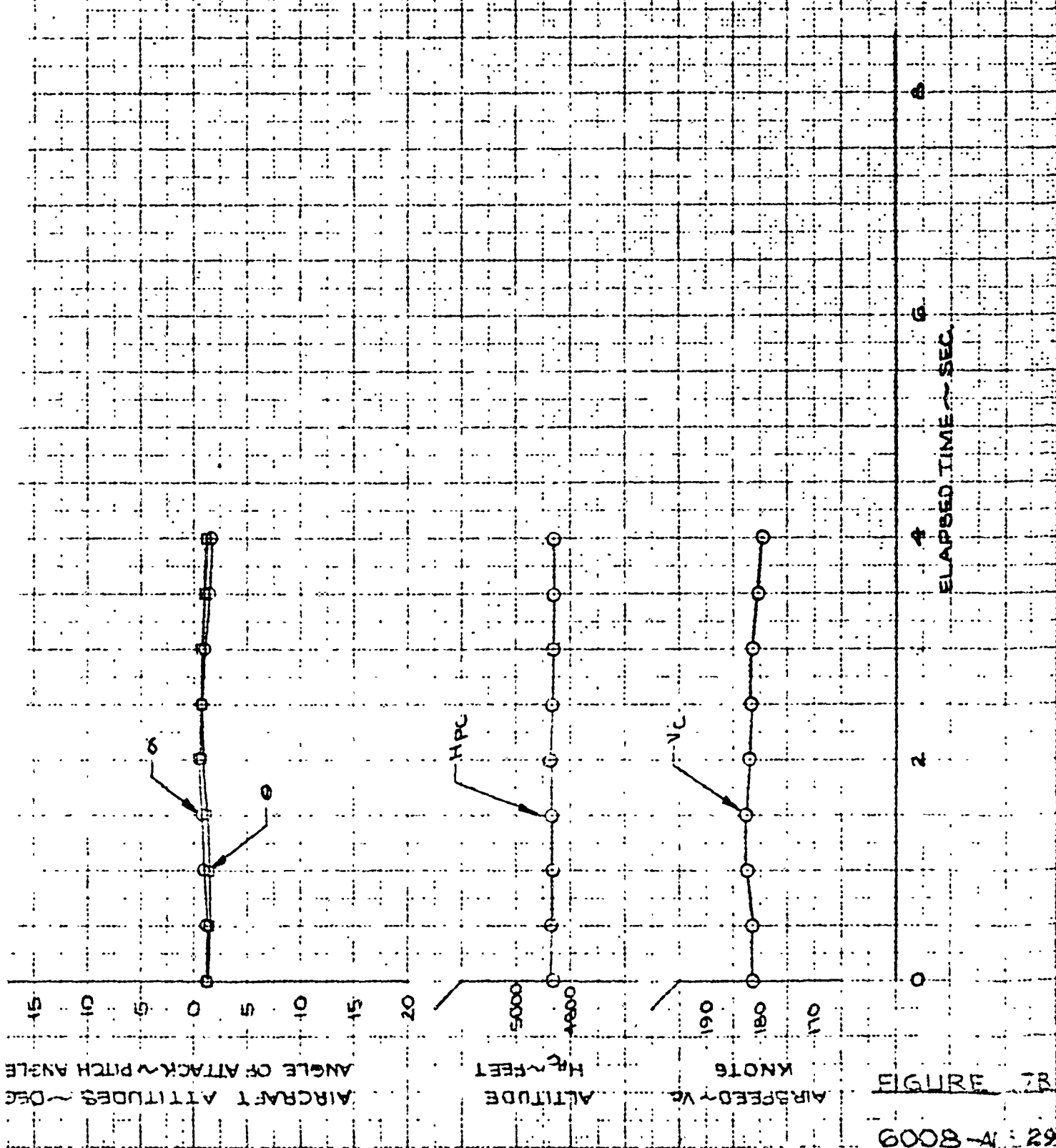
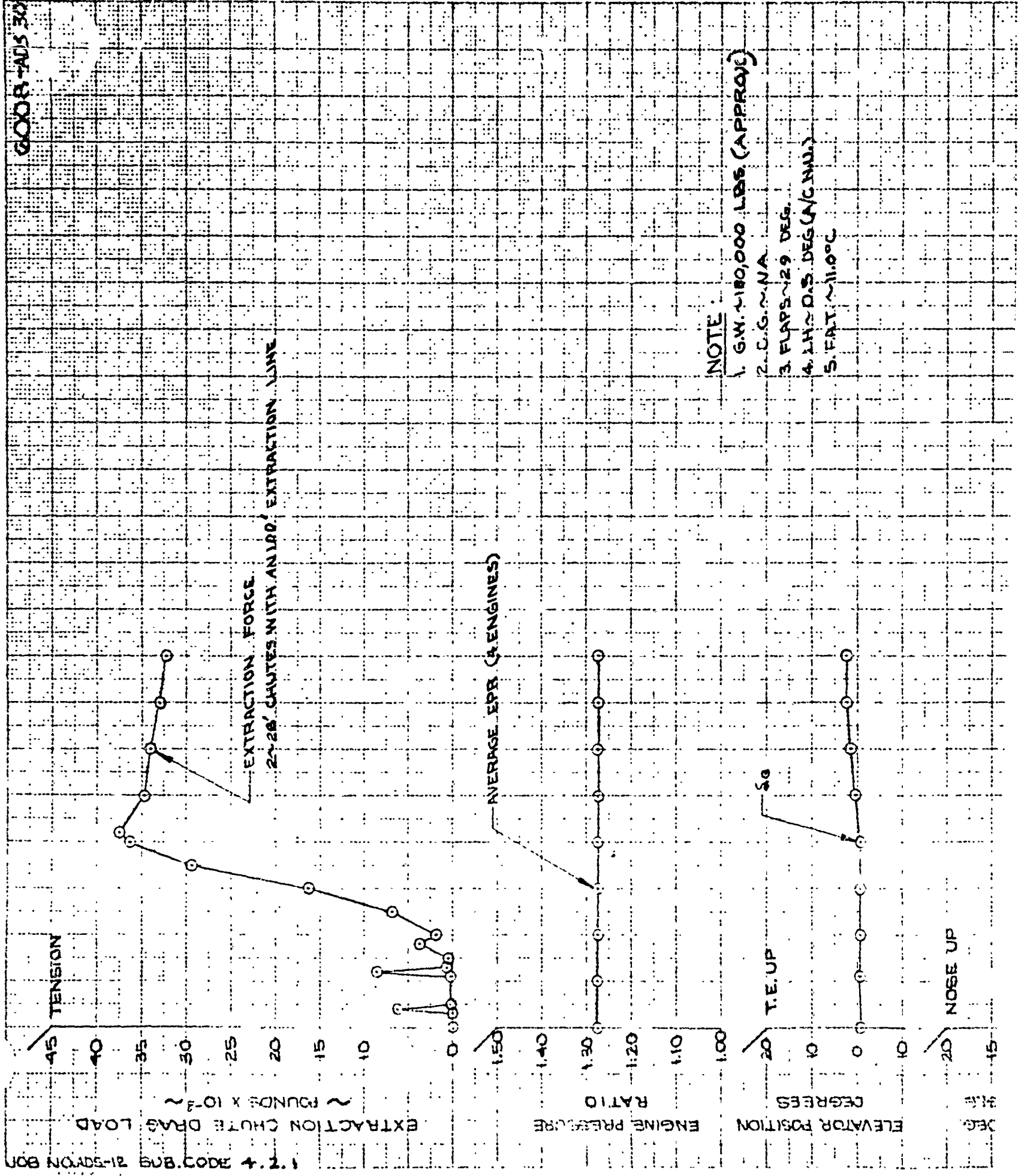


FIGURE 7B

6008-A-29
REVISED 12-8-65 MBH



GOODRICH-AD-530

1.7.4 2003.B09 21-500N 808

PREPARED BY T.E.D.
 DATE 3-22-65
 CHECKED BY J.W.B.

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL 0-141A
 PAGE C-22

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AF43-8077 LAC 6008
 FLIGHT 83 DATE 3-19-65

RUN 4

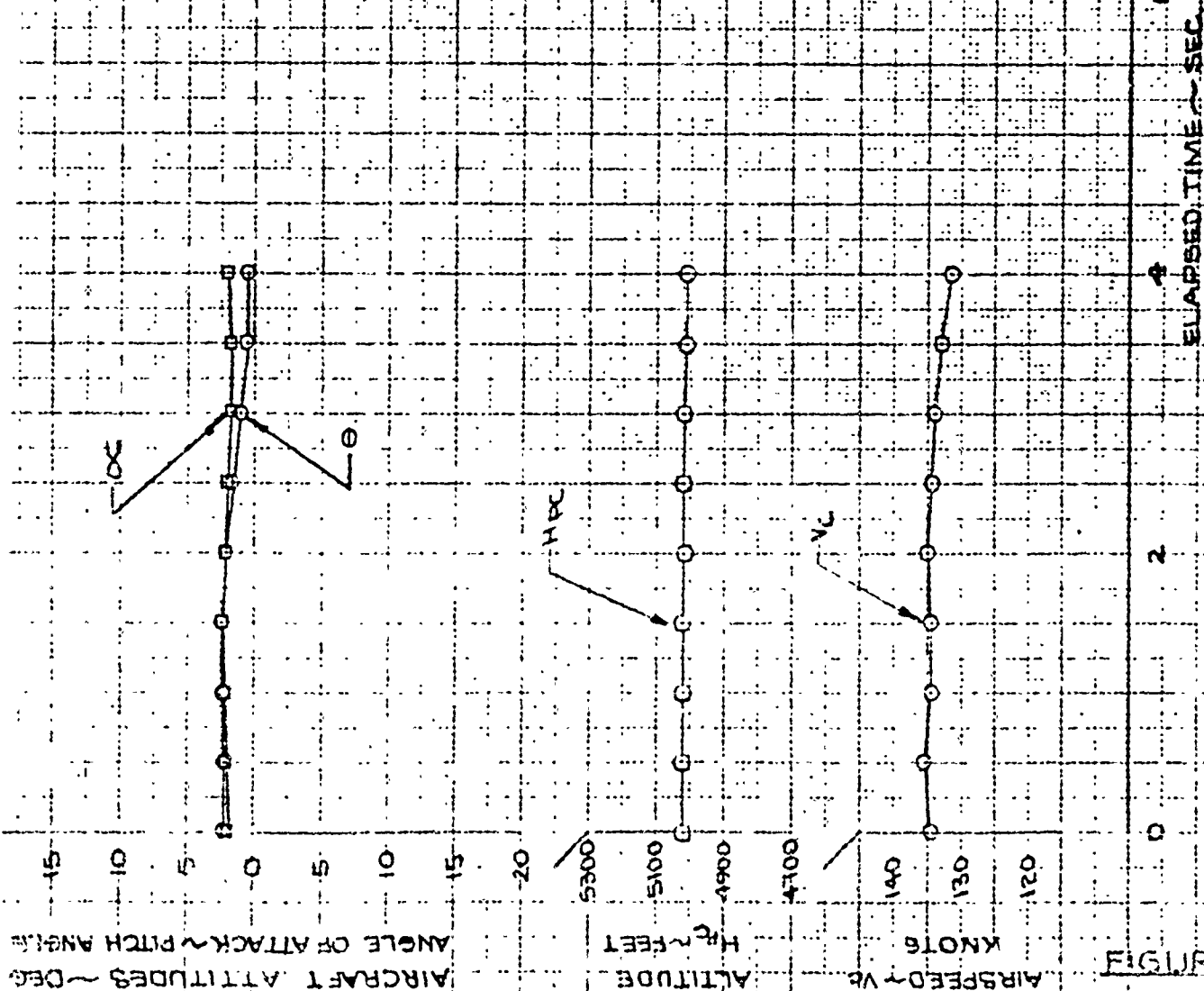
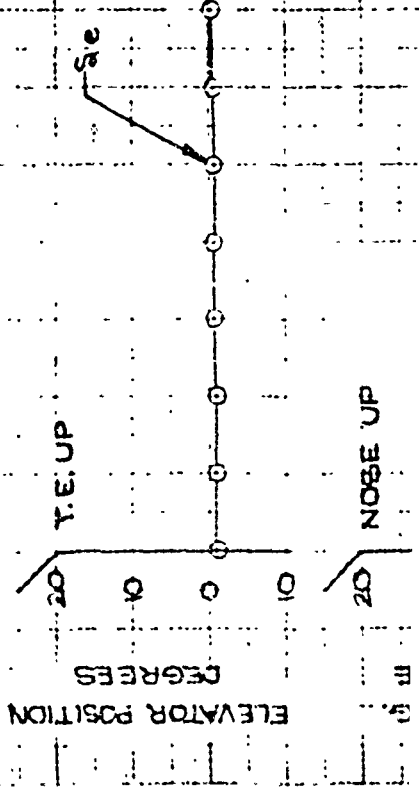
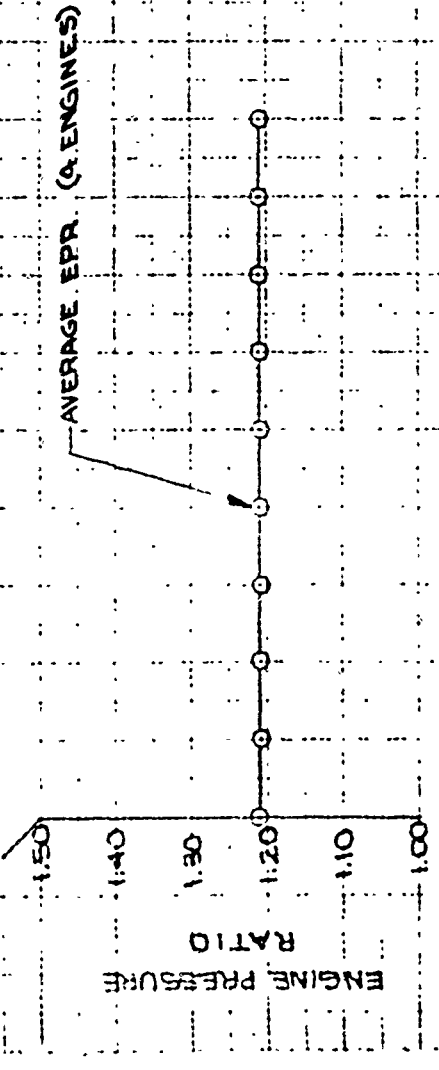
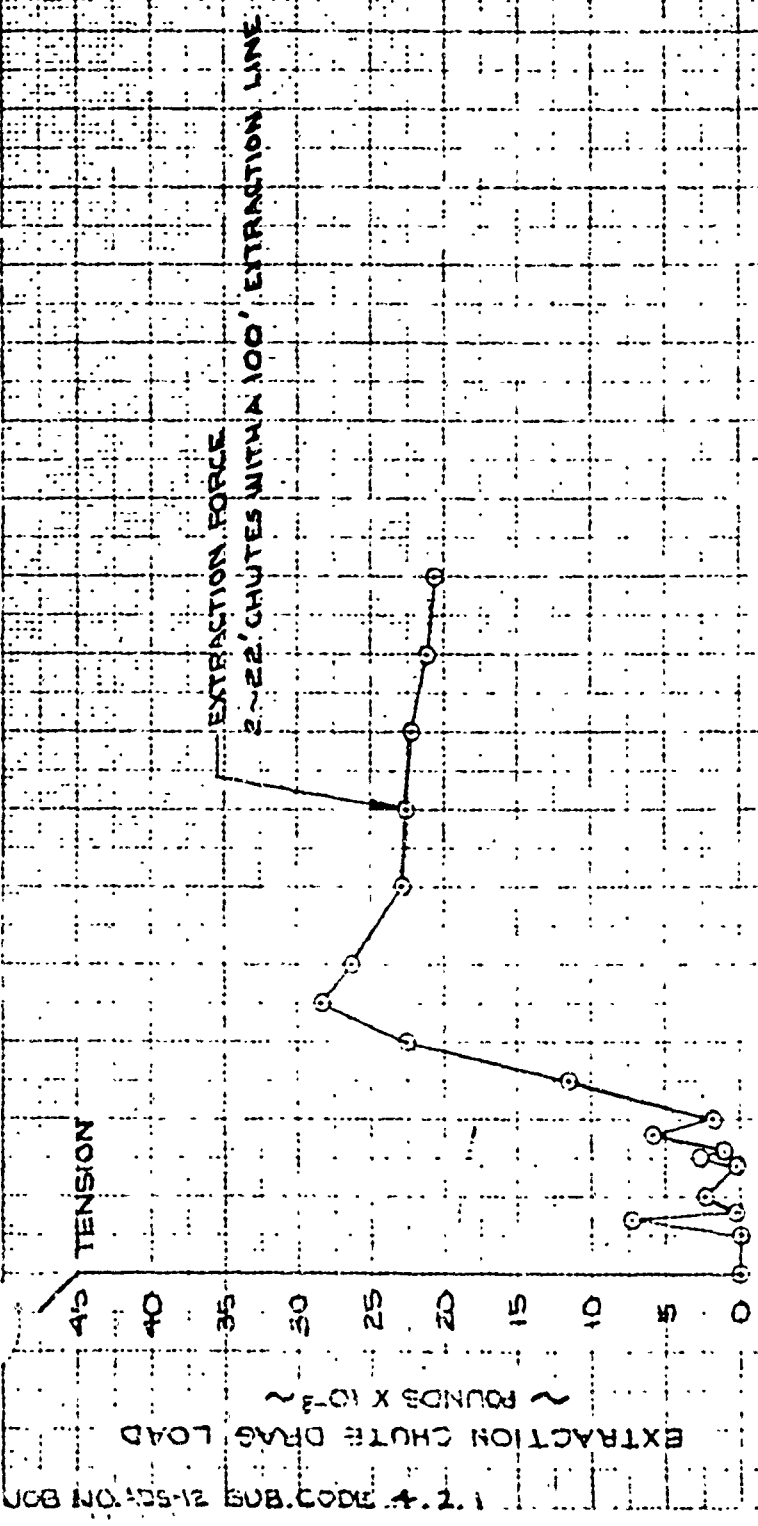


FIGURE 2C

6008-A-30
 REVISED 12-8-5 MCM



- NOTE:
1. G.W. ~ 170,000 LBS (APPROX)
 2. C.G. ~ N/A
 3. FLAPS ~ 26 DEG.
 4. A.H. ~ 0.2 DEG. (A.K.N.U.)
 5. F.A.T. ~ 12.0 DEG.

PREPARED BY T.E.D.
DATE 3-23-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A
PAGE C-23

ADS EXTRACTION CHUTE TOW

TEST

MODEL C141A
AF63-8077 LAC 6008
FLIGHT B3 DATE 3-19-68

RUN 5

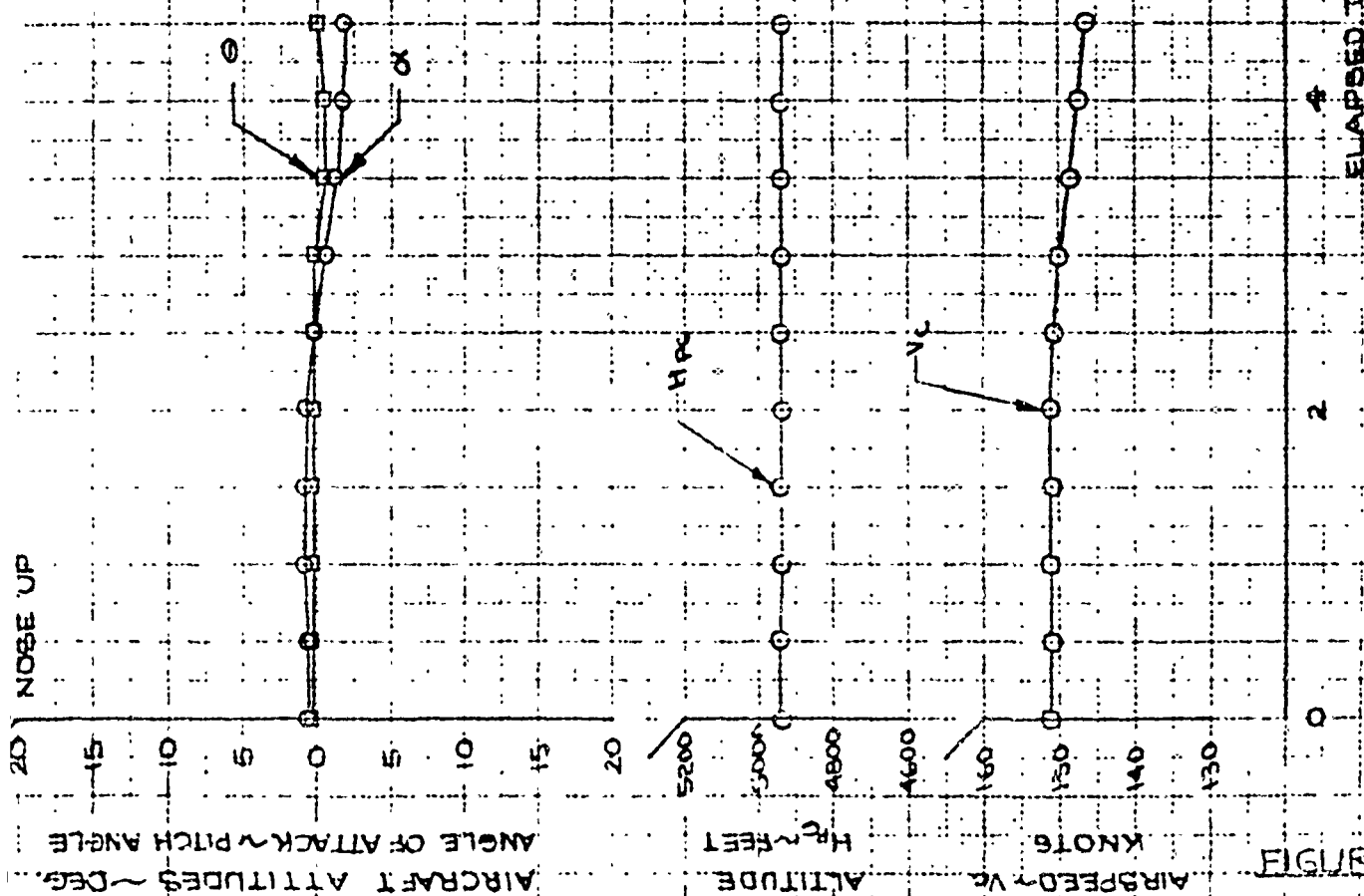
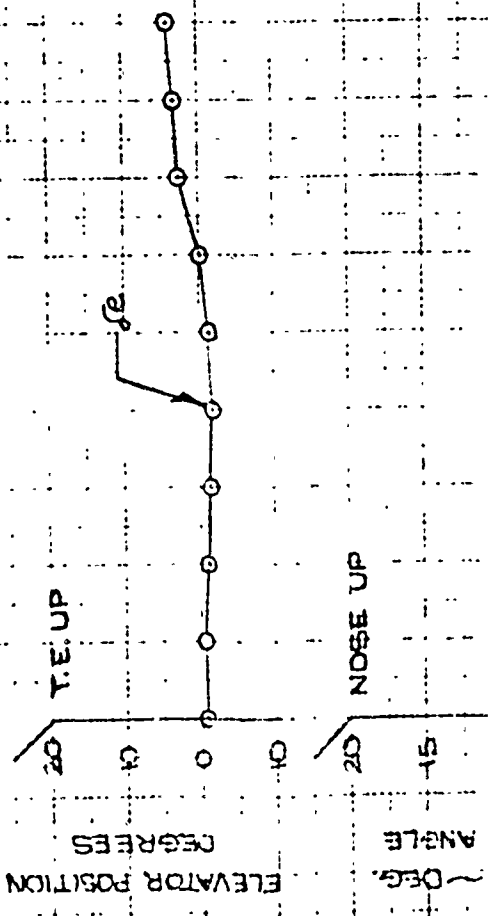
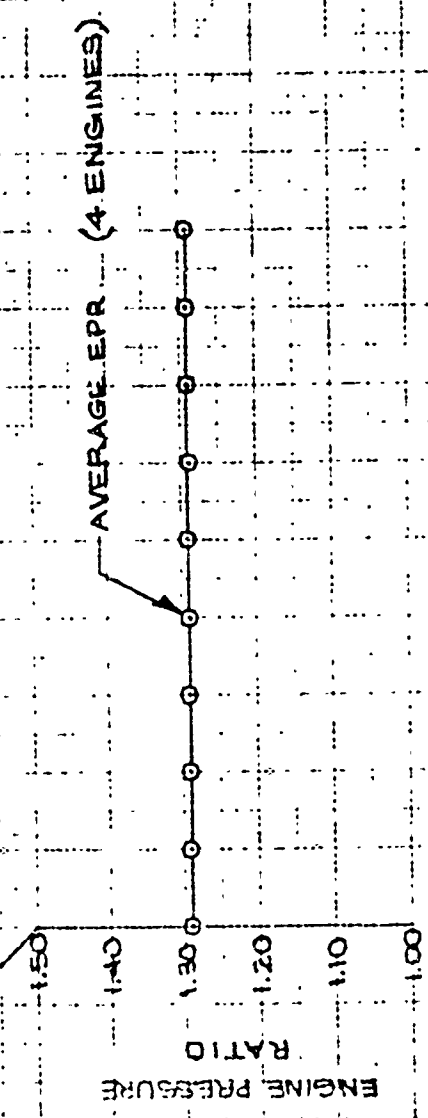
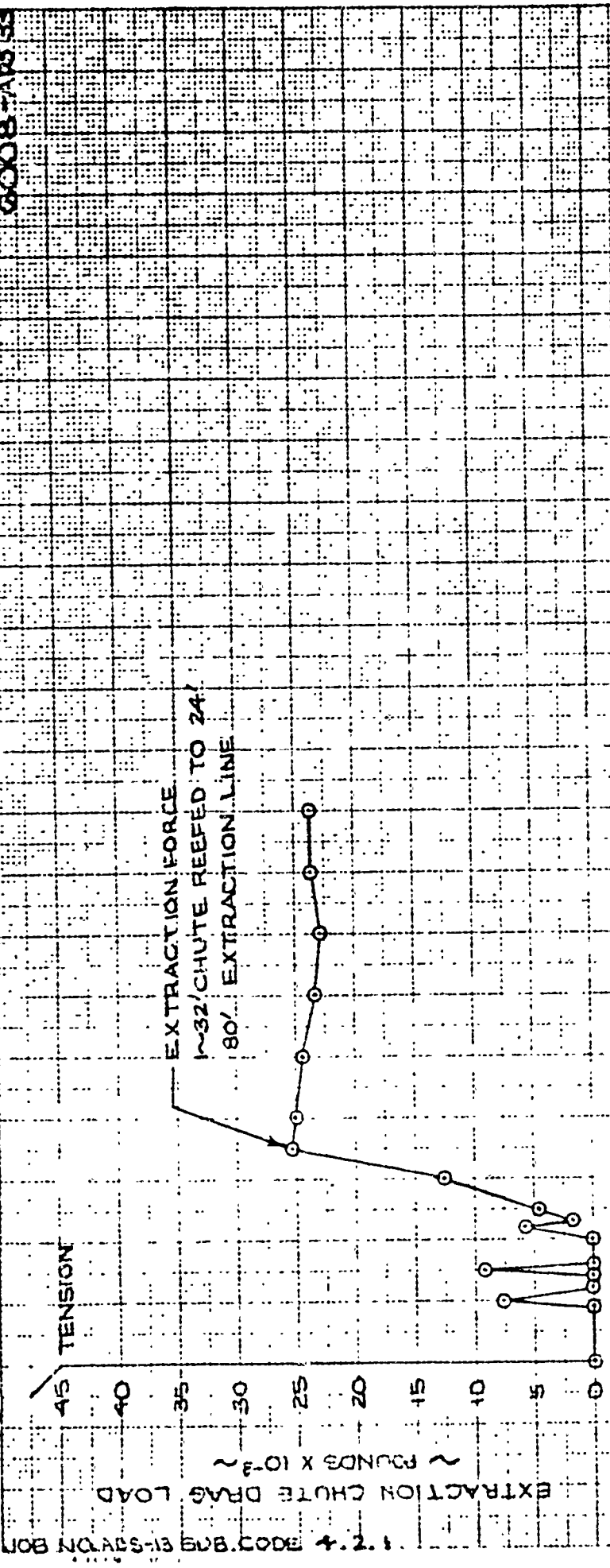


FIGURE C70

6008-1.5.31
REVISED 12-8-65 MBH



NOTE:

- 1. G.W. ~ 195,000 LBS (APPROX)
- 2. C.G. ~ N/A
- 3. FLAPS ~ 17.0 DEG.
- 4. I.H. ~ 0.3 DEG (A/C N.D.)
- 5. FAT ~ 16.0°C.

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AF63-8072 LAC 6008
 FLIGHT 94 DATE 3-22-65

RUN 2

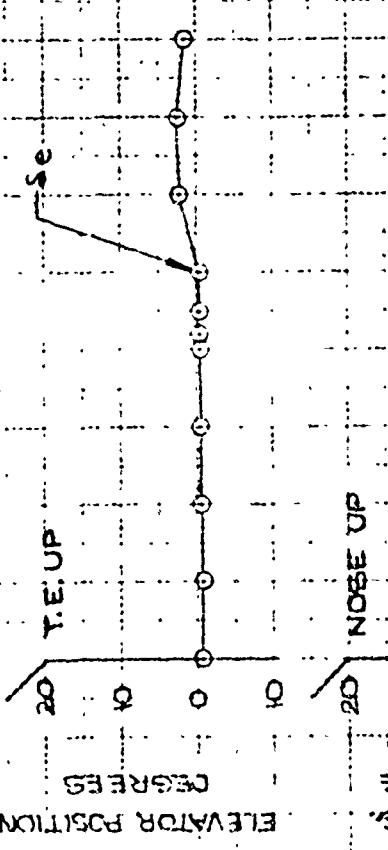
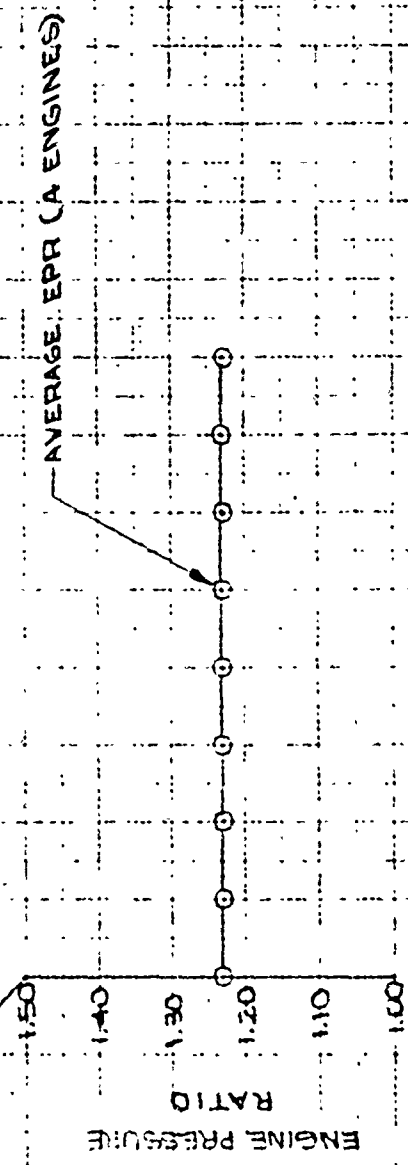
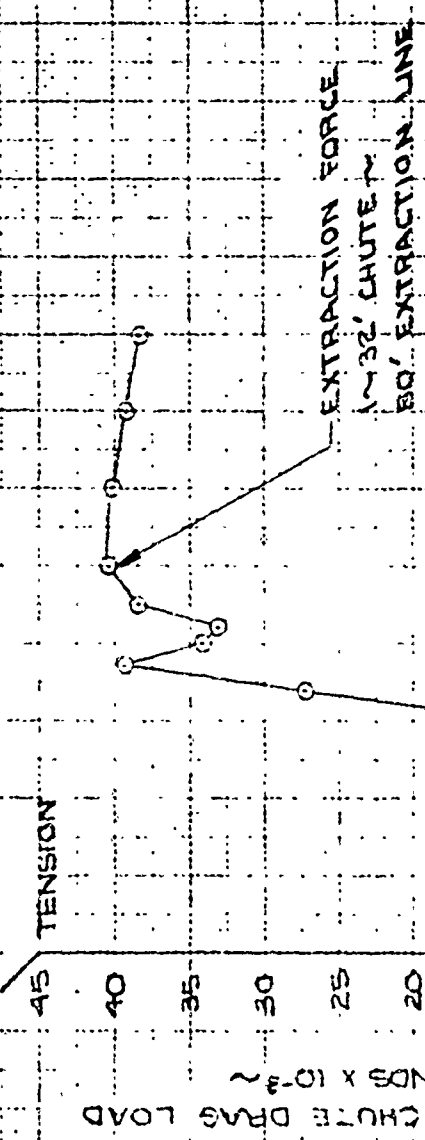


FIGURE 68A

6008-ADS33
 REVISED 12-8-65
 MBH

GOOB-ADS 34

1.2.4 3003-BUB CODE 4.2.1



- NOTE
1. G.W. ~ 199,000 LBS. (APPROX.)
 2. C.G. ~ NA
 3. FLAPS ~ 19.0 DEG
 4. LH ~ 0.3 DEG. (KCN.D.)
 5. F.A.T. ~ 16.0 °C

PREPARED BY T.R.D.

DATE 3-23-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT COMPANY

REPORT NO ER 5473

MODEL C-141A

PAGE C-25

ADS EXTRACTION CHUTE TOW

TEST

MODEL C141A

AF63-8077

LAC 6008

FLIGHT 84

DATE 3-22-65

RUN 3

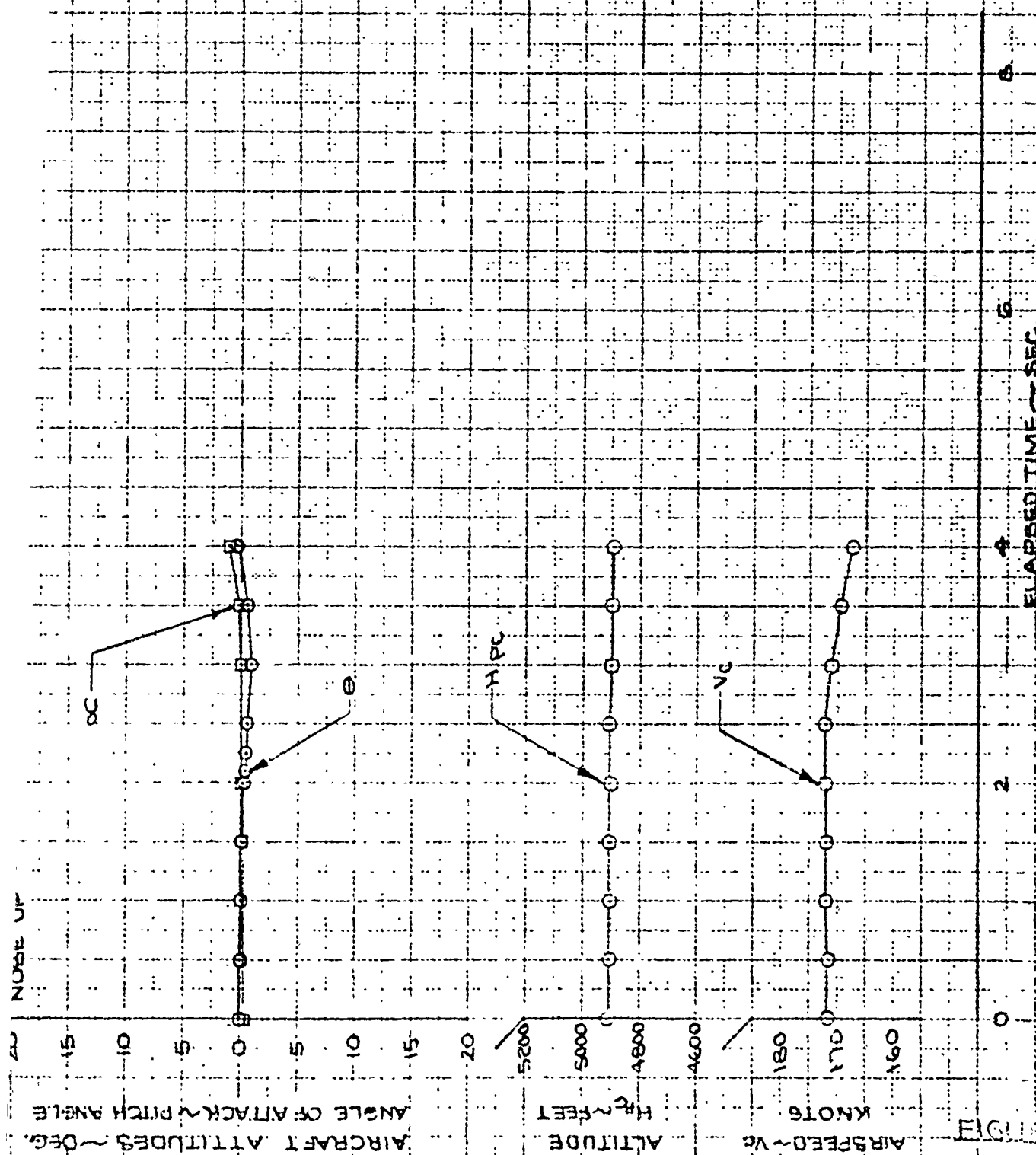


FIGURE C-6B

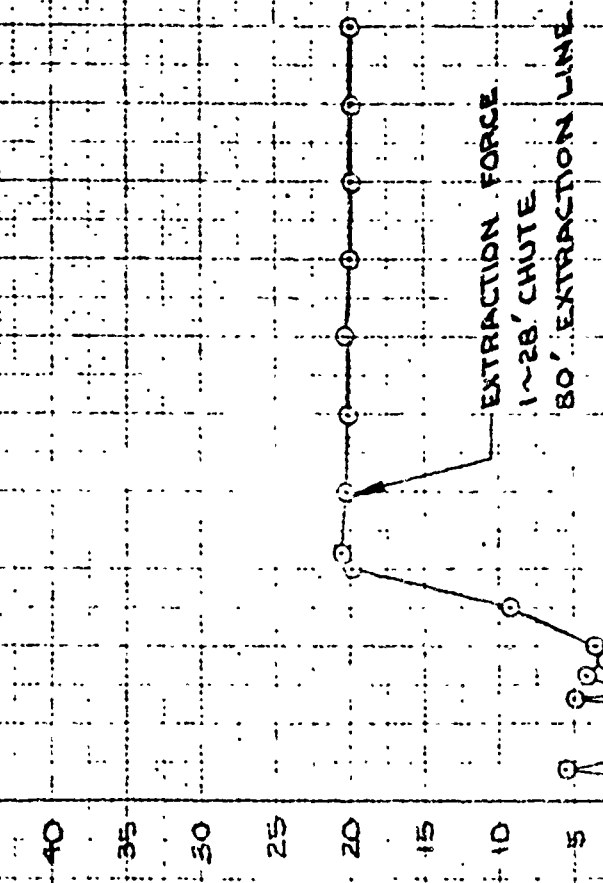
6008-ADS34
REVISED 12-8-65 NBN

6008-AD536

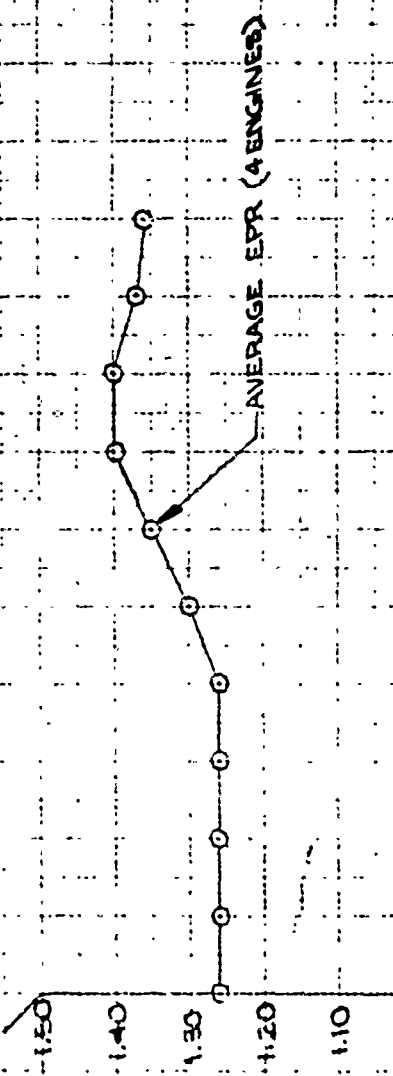
17.4 MOD. B94 4 SUB. CODE 14 NO. 208

TENSION

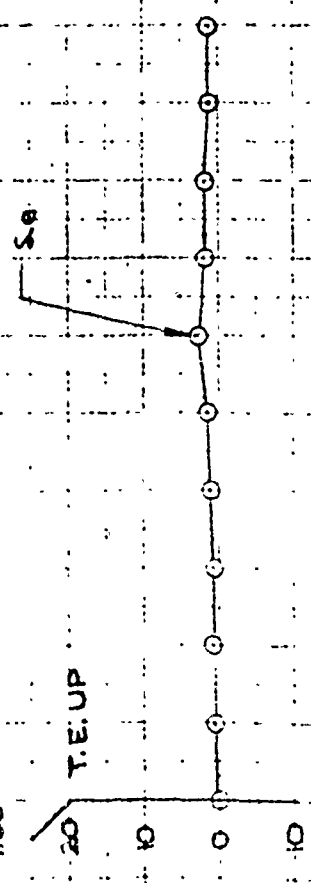
EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³ ~



ENGINE PRESSURE
RATIO



ELEVATOR POSITION
DEGREES



NOSE UP



NOTE:

1. G.W. ~ 107,000 LBS (APPROX.)
2. C.G. ~ N.A.
3. FLAPS ~ 29 DEG
4. LH ~ 3.0 DEG (ACTUAL)
5. FLAT ~ 105 DEG

PREPARED BY **TED**
 DATE **3-22-65**
 CHECKED BY **ALP**

LOCKHEED GEORGIA COMPANY
 DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **C-26**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**

AF63-8077

LAC 6008

FLIGHT 88

DATE 3-23-65

RUN 2

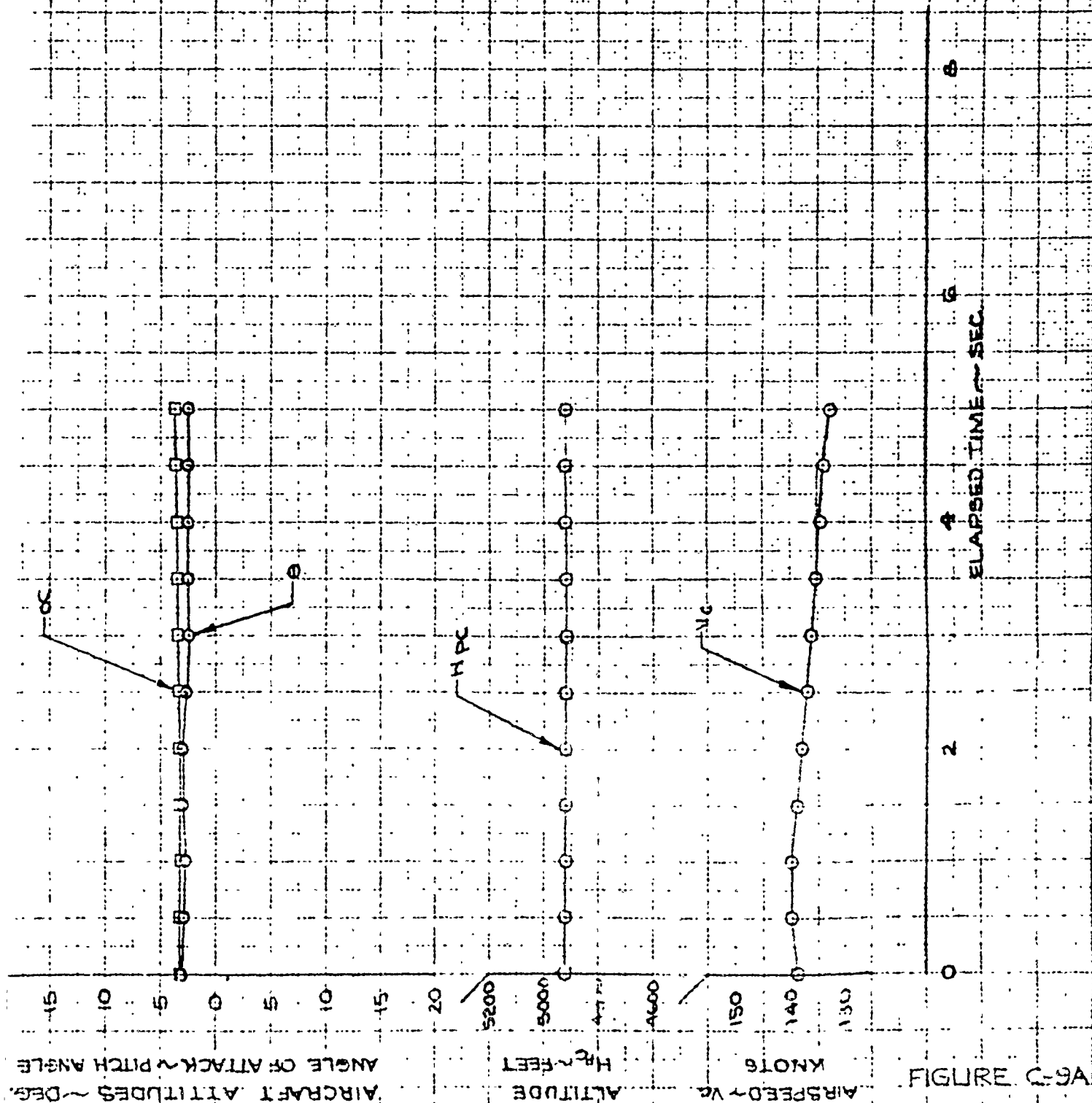
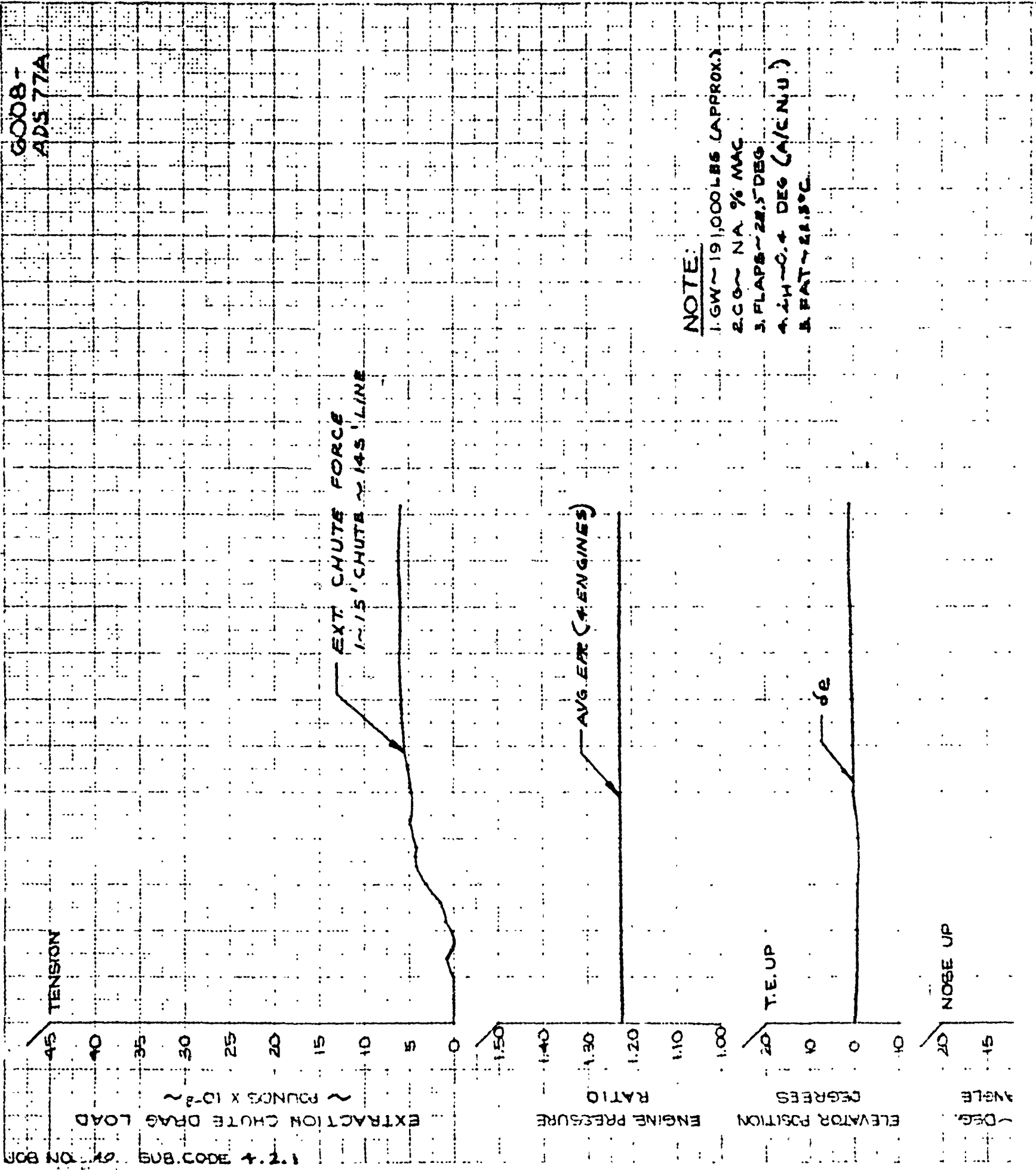


FIGURE C-9A

6008-ADS-36
 REVISED 12-8-65 MBH



REPORT NO. **RSA**
5-11-66
20

ENGINEERED BY COMPANY

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **C-27**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**
AF63-8077 **LAC 6008**
FLIGHT ~ 122 **DATE ~ 5-11-66**

RUN 1

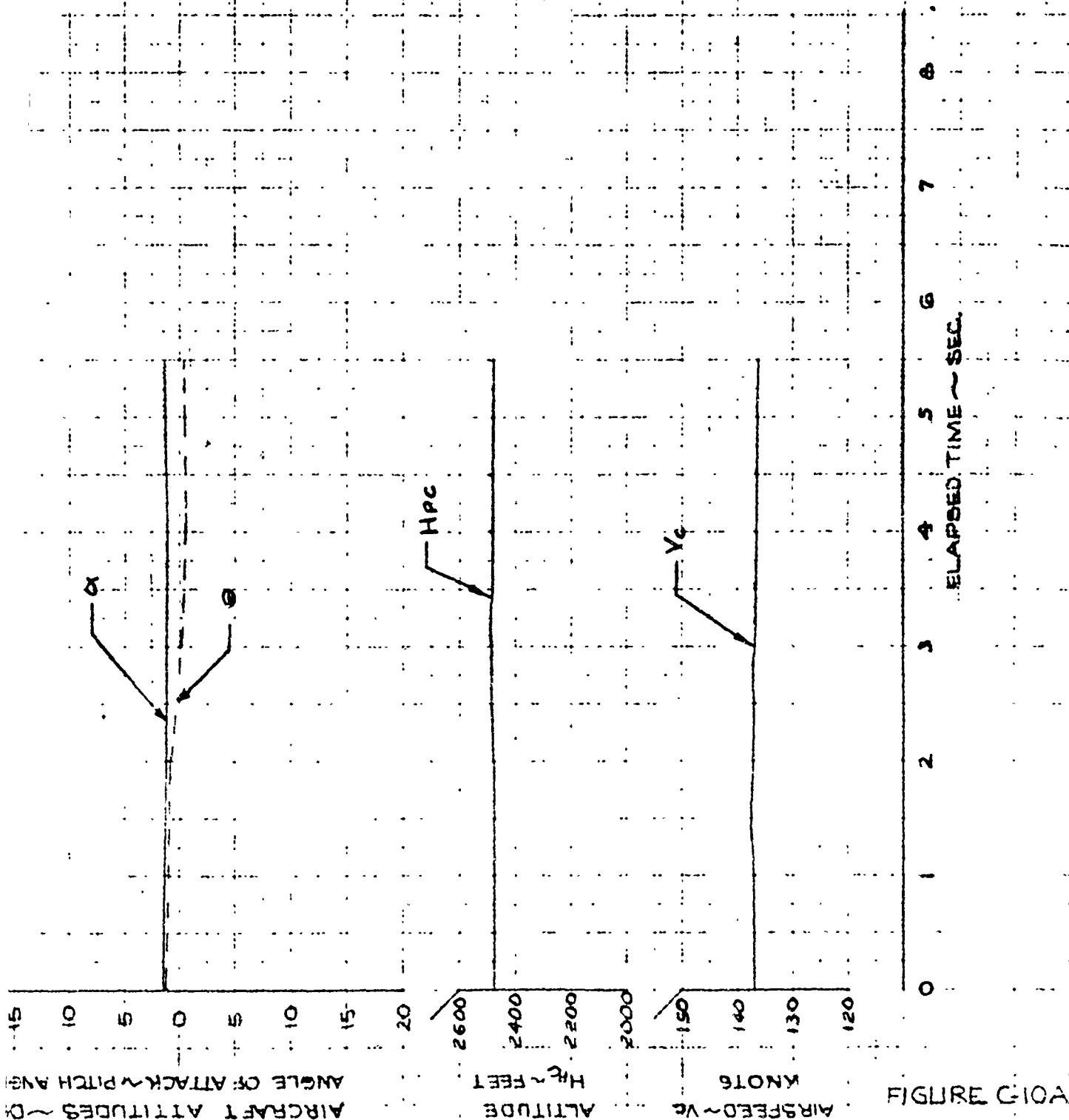
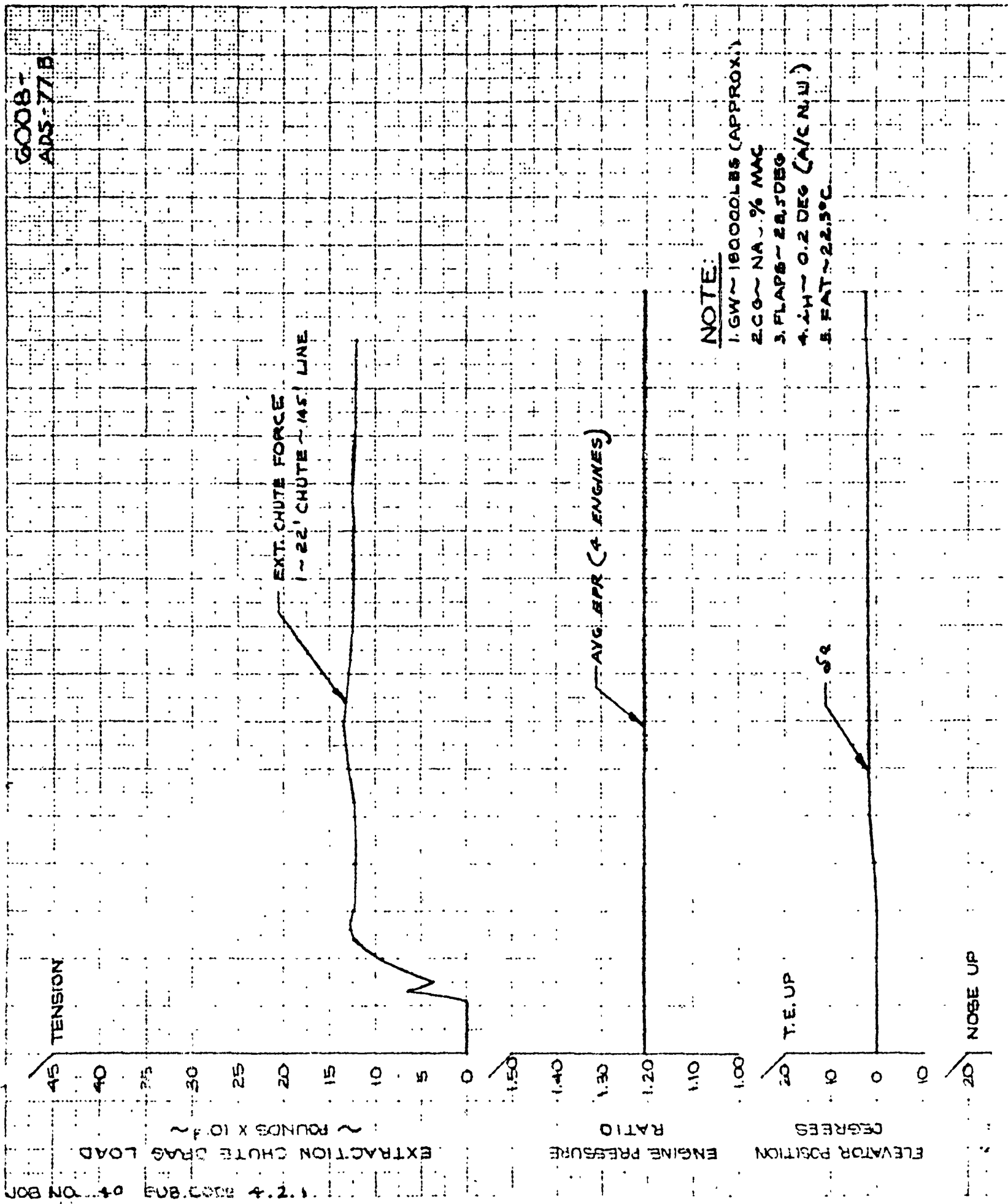


FIGURE C-10A

6008-ADS 77A
REVISED 12-9-65 MSH

6008-
AD5-77B



PREPARED BY **2SA**
 DATE **5-11-65**
 THE REG BY **[Signature]**

1. CRUISE SPEED FOR MAX. IMPACT

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **C-28**

ADS EXTRACTION CHUTE TOW TEST

MODEL **C141A**
AF23-8077 LAC 6008
FLIGHT ~ 122 DATE ~ 5-11-65

RUN 2

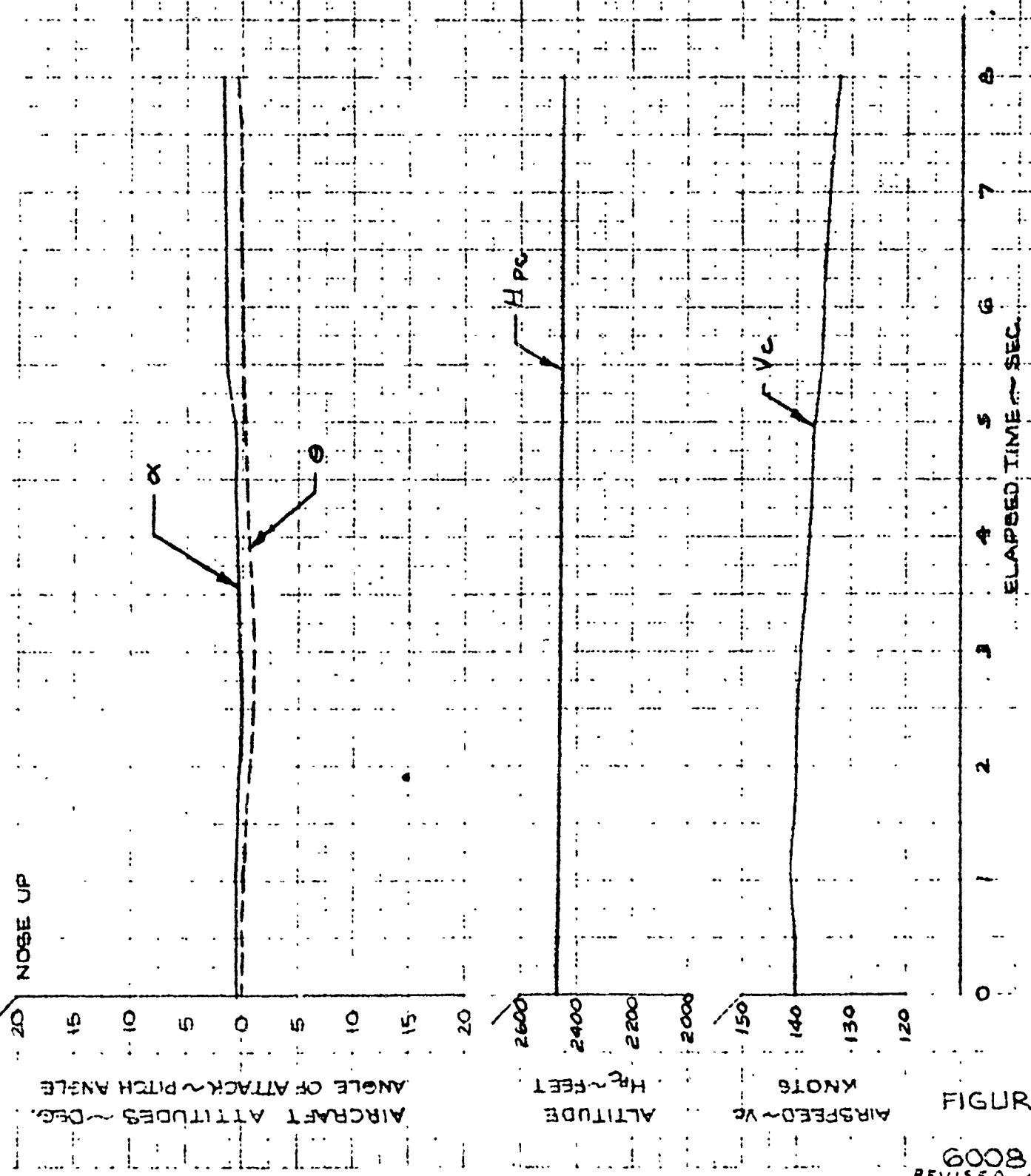
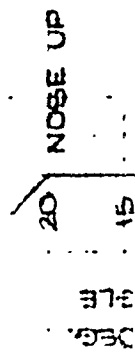
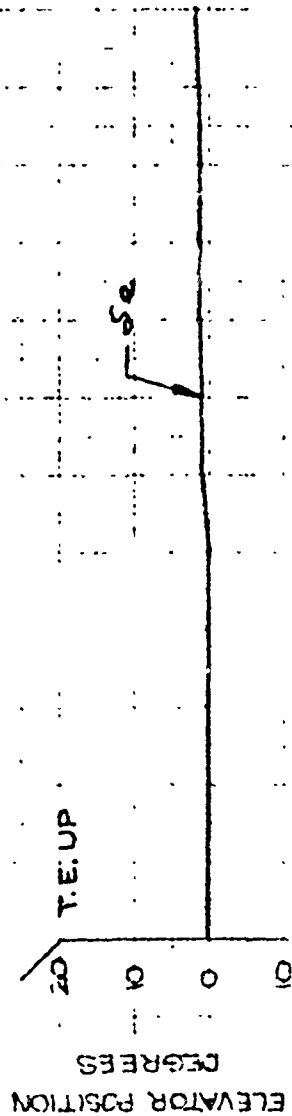
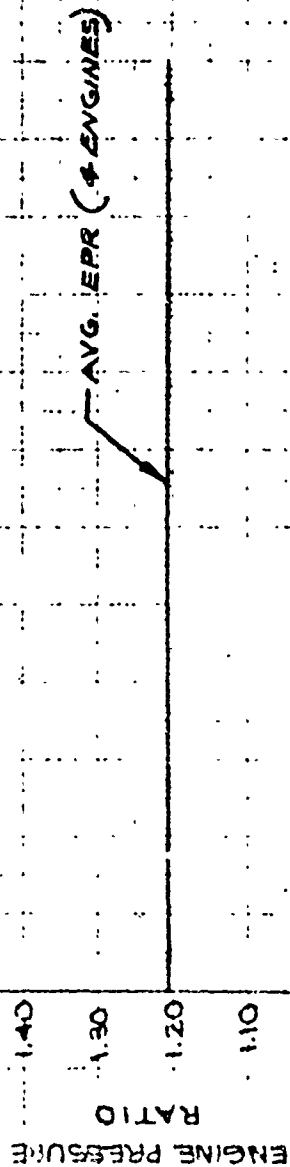
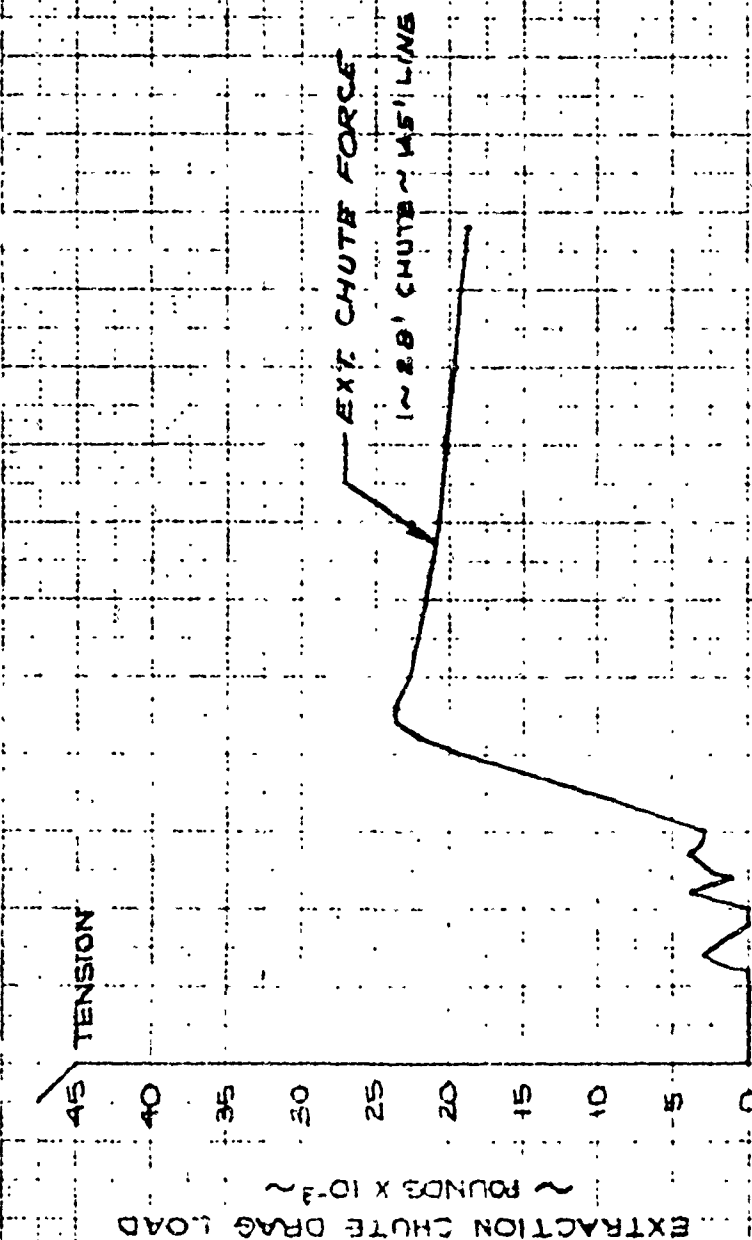


FIGURE C-10

6008-ADS 71.3
 REVISED 12-9-65
 MRN

6008-
AD3.77C



NOTE:

1. GW ~ 17500 LBS (APPROX.)
2. CG ~ NA % MAC
3. FLAPS ~ 28.5 DEG
4. LH ~ 0.5 DEG (A/E N.U.)
5. FAT ~ 22.5 °C

TESTED BY TEP & RSA
DATE 5-11-65
REF BY [Signature]

ENGINEERED BY [Signature]

DR 2417
C-141A
C-29

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT ~ 123 DATE ~ 5-11-65

RUN 3

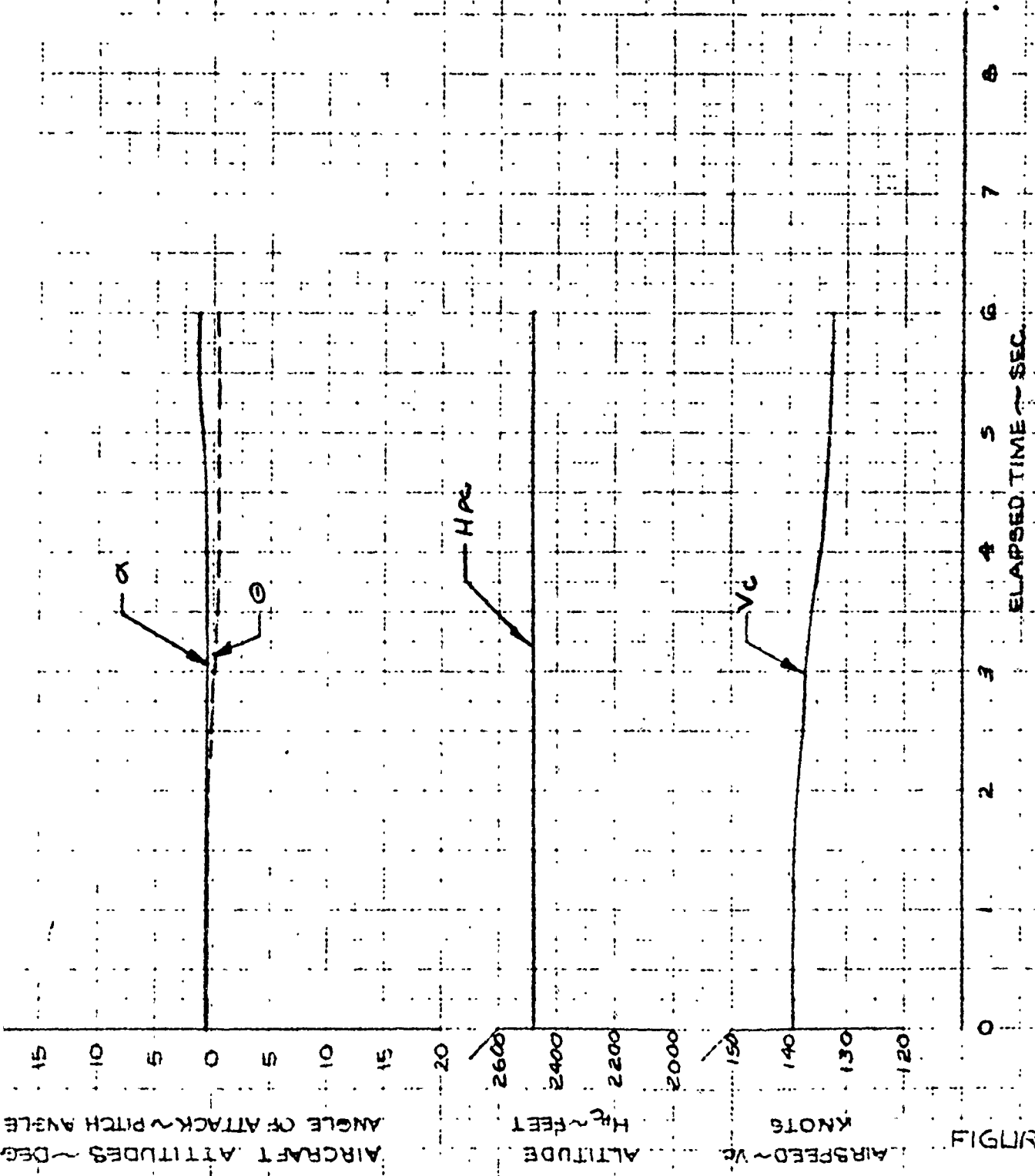


FIGURE C-100

6008-ADS 770
REVISED 12-9-65 MBH

6008-AD579

TENSION

45

40

35

30

25

20

15

10

5

0

EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³

EXTRACTION FORCE
15' CHUTE
145' EXTRACTION LINE

ENGINE PRESSURE
RATIO

1.50

1.40

1.30

1.20

1.10

1.00

AVG. EPR (4 ENGINES)

ELEVATOR POSITION
DEGREES

T.E. UP

Sc

NOSE UP

LE

EG.

NOTE:

1. GW ~ 18000 LBS (APPROX.)
2. CO ~ NA % MAC
3. FLAPS ~ 28.4 DEG
4. α ~ 1.0 DEG (A/C N3U.)
5. FAT ~ 160°C.

TED
 3-13-69
leaf

WHEELS & ENGINE

C-141A
 C-30

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AFG3-8077 LAG 6008
 FLIGHT-124 DATE-3-13-65

RUN 1

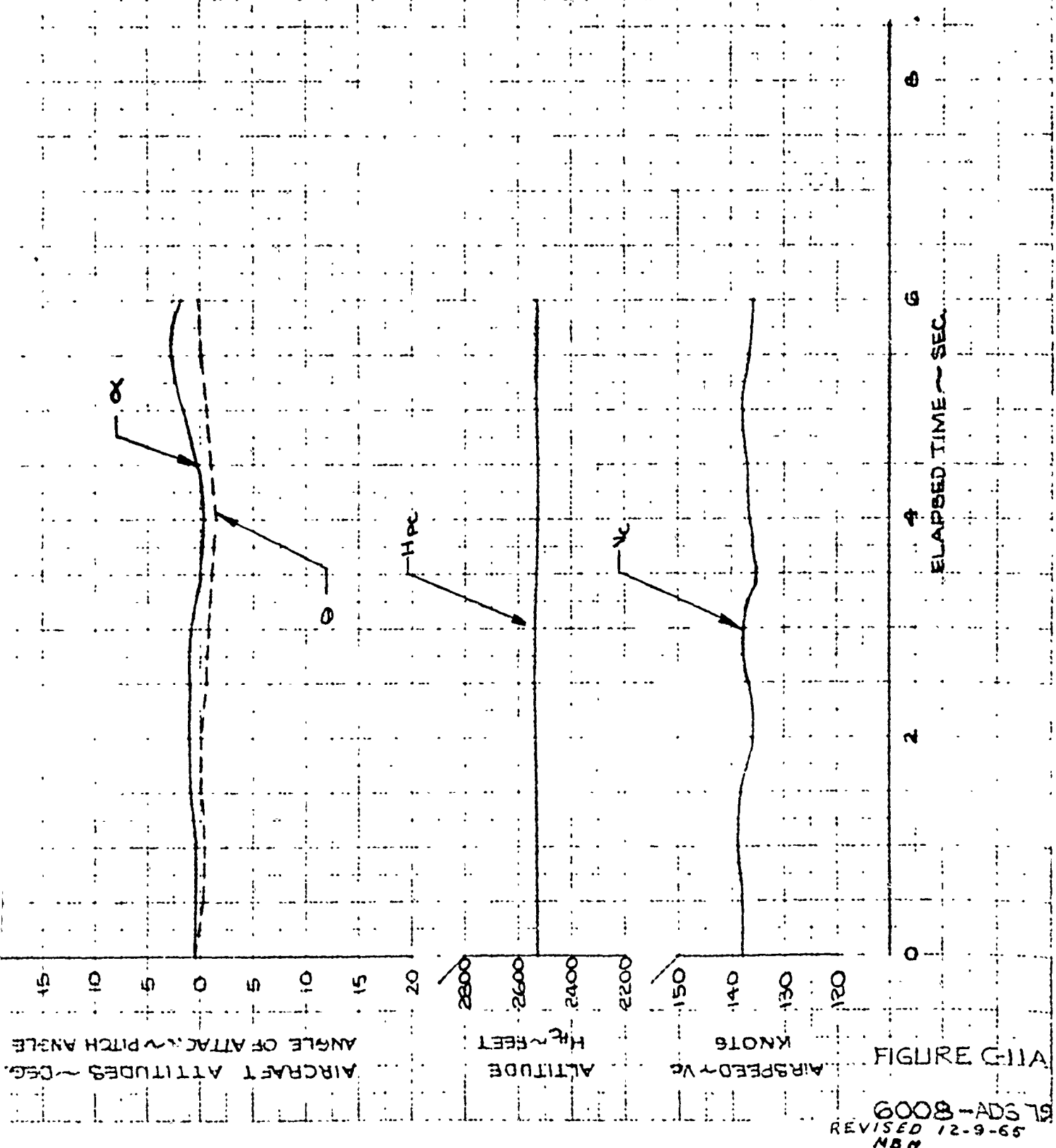


FIGURE G-11A

6008-ADS 79
 REVISED 12-9-65
 NBN

6008-108

TENSION

EXTRACTION CHUTE DRAG LOAD
~ POUNDS X 10⁻³

EXTRACTION FORCE
1. 24' RING SLOT (REINFORCED) - NO LINE

ENGINE PRESSURE
RATIO

AVG EPR (4 ENGINES)

ELEVATOR POSITION
DEGREES

T.E. UP

NOSE UP

NOTE:

- 1. GW ~ 174400 LBS
- 2. CG ~ 34.5 % MAC
- 3. FLAPS ~ 22 DEG
- 4. 2H ~ 1.2 DEG (A/C NU.)
- 5. FWT ~ 33 °C

PREPARED BY: R10
DATE: 7-16-65
CHECKED BY:

LOCKHEED GEORGIA COMPANY

REQ. NO. ER 5473
MODEL C-141A
PAGE C-31

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 152 DATE 7-14-65

RUN 1

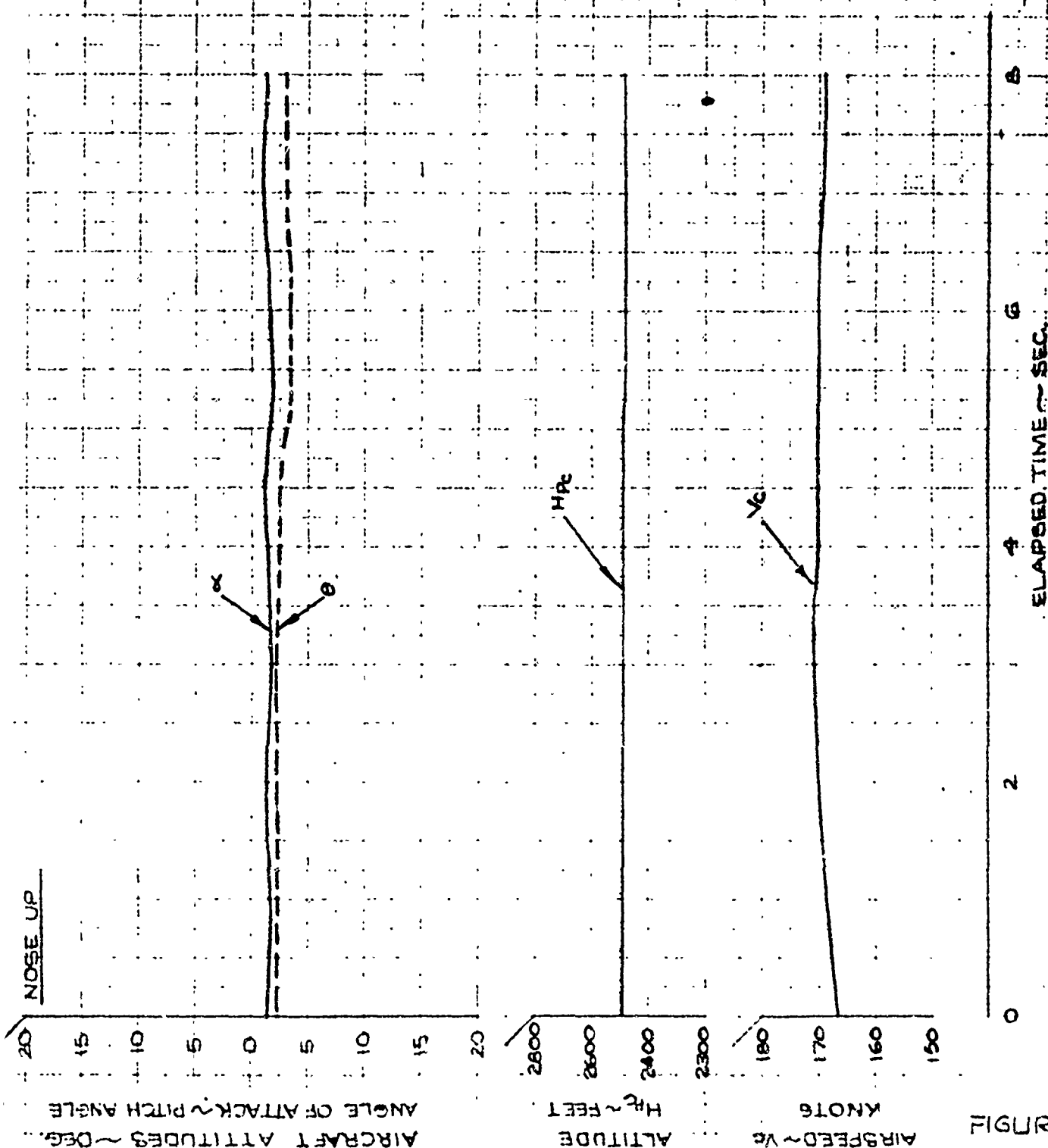


FIGURE C-12A

6008-108
REVISED 12-9-65
MBH

6008-109

TENSION

45

40

35

30

25

20

15

10

5

0

EXTRACTION CHUTE DRAG LOAD

~ POUNDS X 10⁻² ~

EXTRACTION FORCE

1-24" RING SLOT (REINFORCED)

EXTRACTION LINE LENGTH ~ 80'

ENGINE PRESSURE

RATIO

1.50

1.40

1.30

1.20

1.10

1.00

AVG EPR (4 ENGINES)

ELEVATOR POSITION

DEGREES

20

10

0

10

20

30

8°

NOSE UP

20

10

0

10

20

NOTE:

1. GW ~ 172,000 LBS

2. CG ~ 34.6 % MAC

3. FLAPS ~ 19 DEG

4. α ~ 1.2 DEG (A/C NO)

5. FAT ~ 34.2 °C

ENGINEER P. M.H.W.
DATE 7/20/68
CHK BY JWP

LOCKHEED GEORGIA COMPANY
SOUTH LOCKHEED AVENUE, FORT WORTH, TEXAS

REPORT NO. ER 5473
MODEL C-141A
PAGE C-32

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 154 DATE 7-19-68

RUN 1

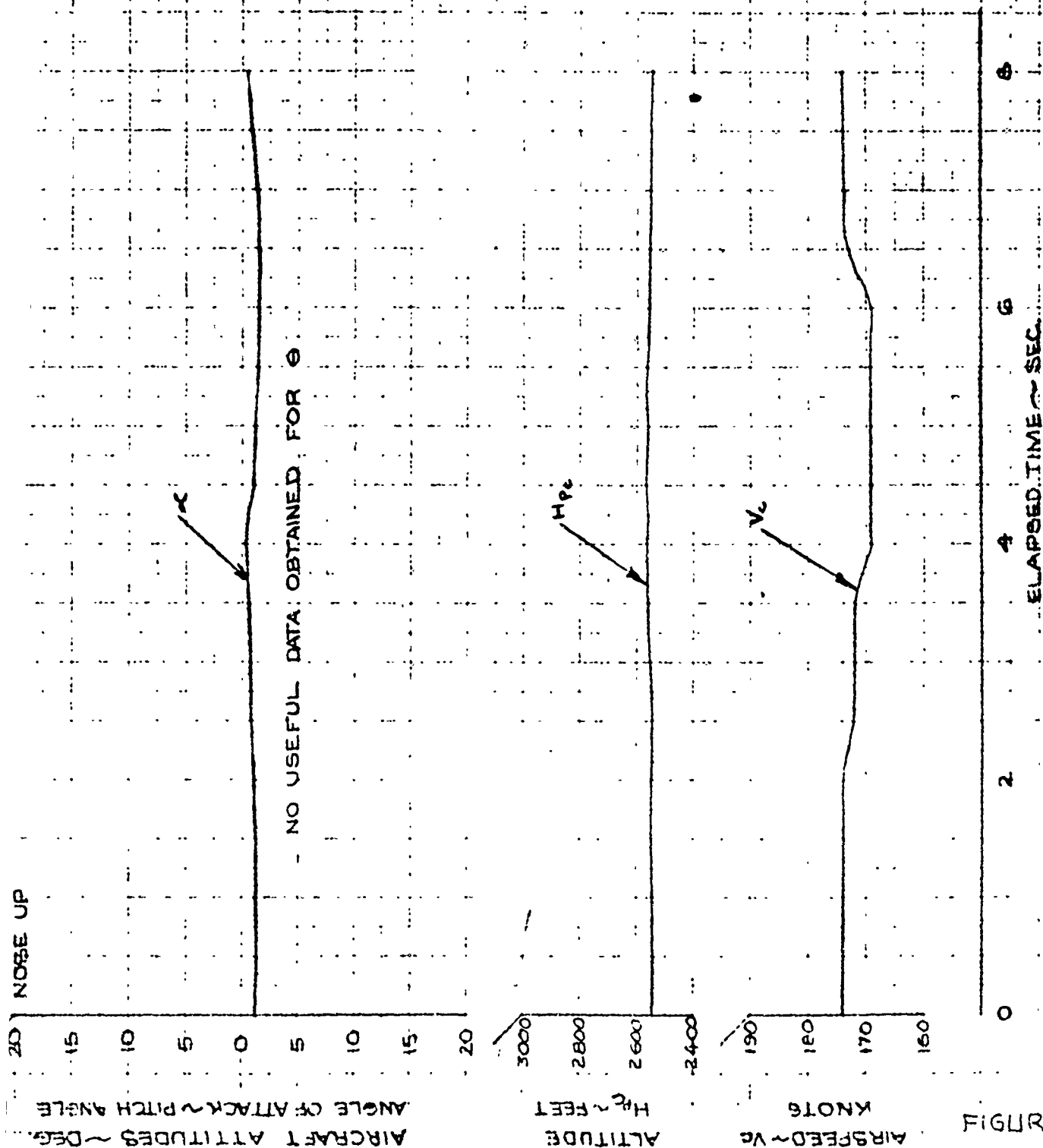
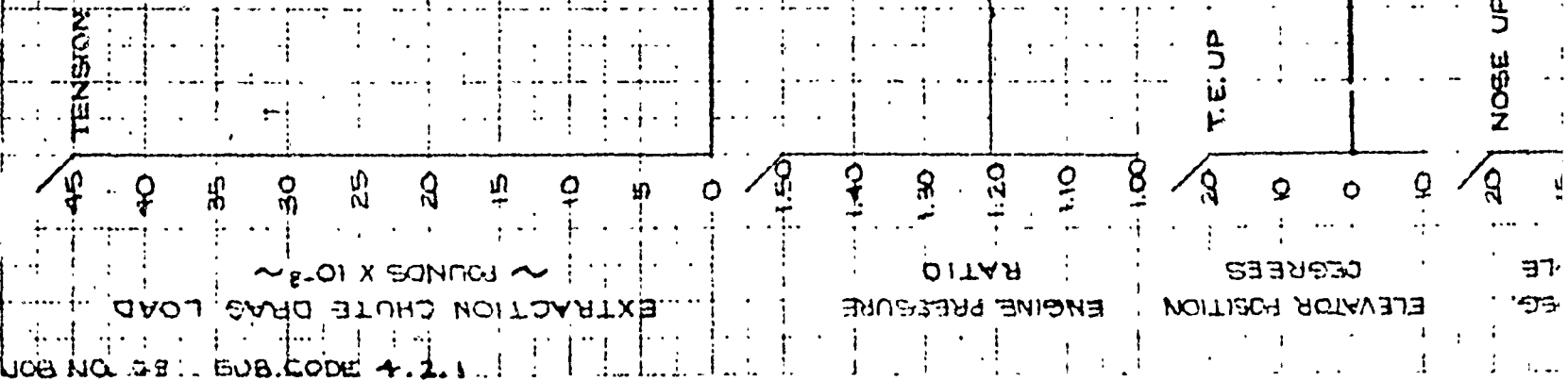


FIGURE C-13A

6008-109

REVISED 12-9-68
MBH

6008-110



NOTE:

1. GW ~ 197000 LBS
2. CO ~ 33% MAG
3. FLAPS ~ 32 DEG
4. α ~ .55 DEG (A/C N.U.)
5. FAT ~ 30 °C

PREPARED BY: RID
 DATE: 7-26-65
 CHECKED BY: JWD

ENGINEERED BY: GEORGE A. CAMPBELL
 PROJECT: C-141A

REPORT NO: ER 5473
 MODEL: C-141A
 PAGE: C-33

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
 AFG3-8077 LAC 6008
 FLIGHT 156 DATE 7-21-65

RUN 2

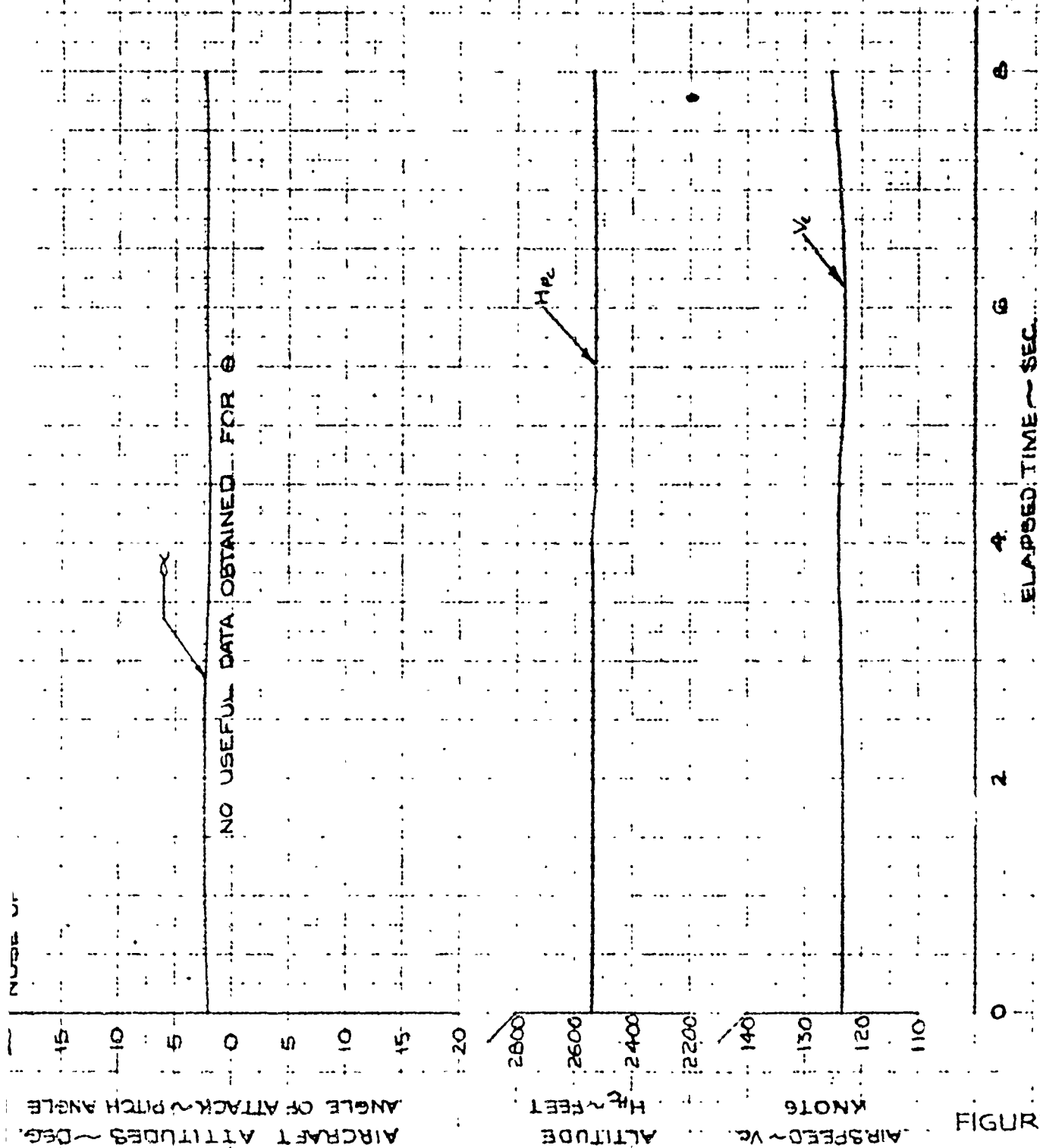
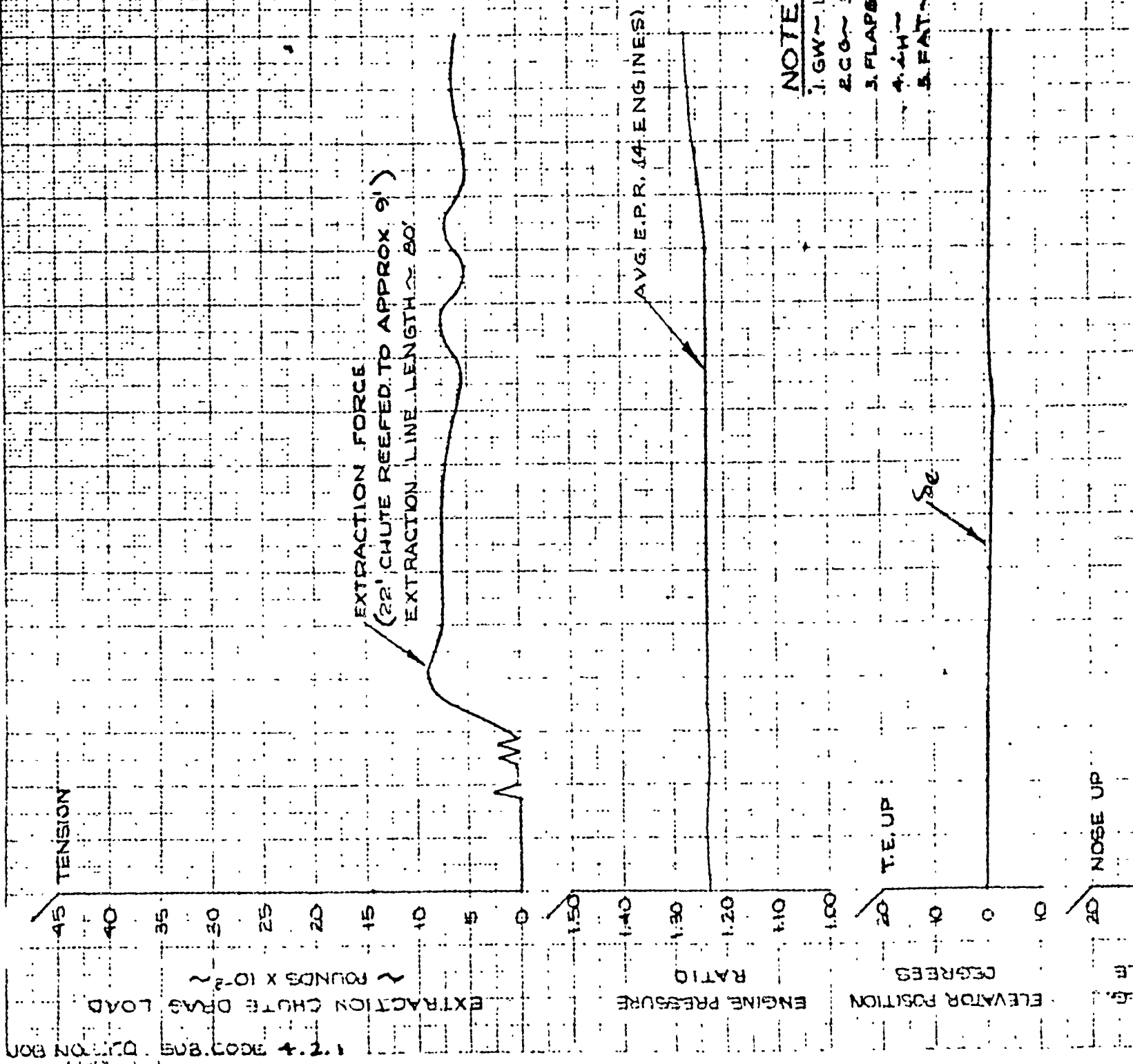


FIGURE C-14A

6008-110
 REVISED 12-9-65
 MBH

6008-11EA



1.7.4 AC07.809 DUTY ON BOB

PREPARED BY RID EMBH
 DATE 7-27-65
 CHECKED BY *sub*

ENGINEERED BY COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 C-34

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AFG3-8077 LAG 6008

FLIGHT 159 DATE 7-26-65

RUN 1

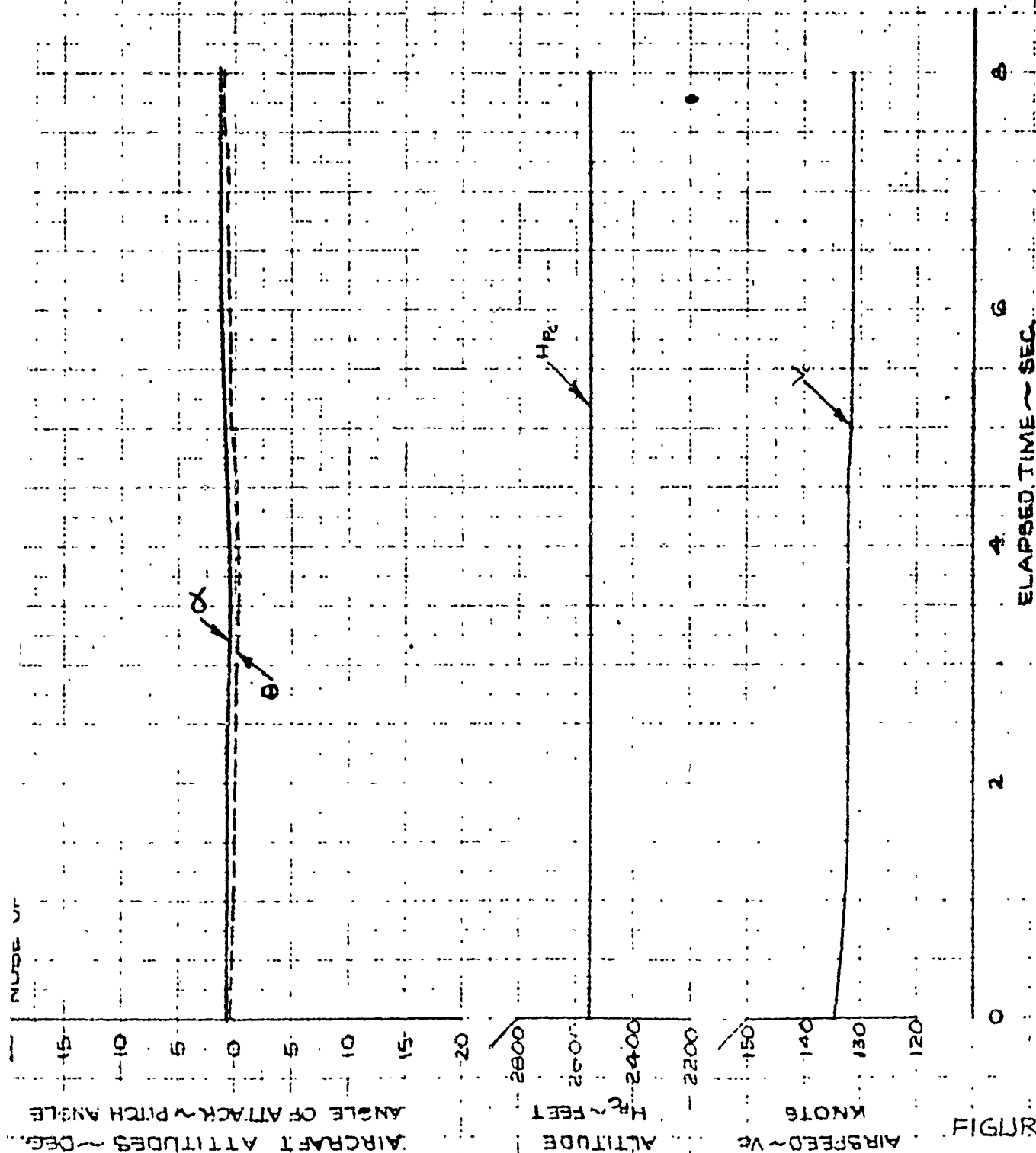


FIGURE C15A

6008-115A

REVISED 12-9-65
 MBH

6008-115B

NO. 70 B08 CODE 4.1.1

TENSION

EXTRACTION CHUTE DRAG LOAD

POUNDS X 10⁻³

EXTRACTION FORCE
(22' CHUTE REEFED TO APPROX. 9')
EXTRACTION LINE LENGTH ~80'

ENGINE PRESSURE

RATIO

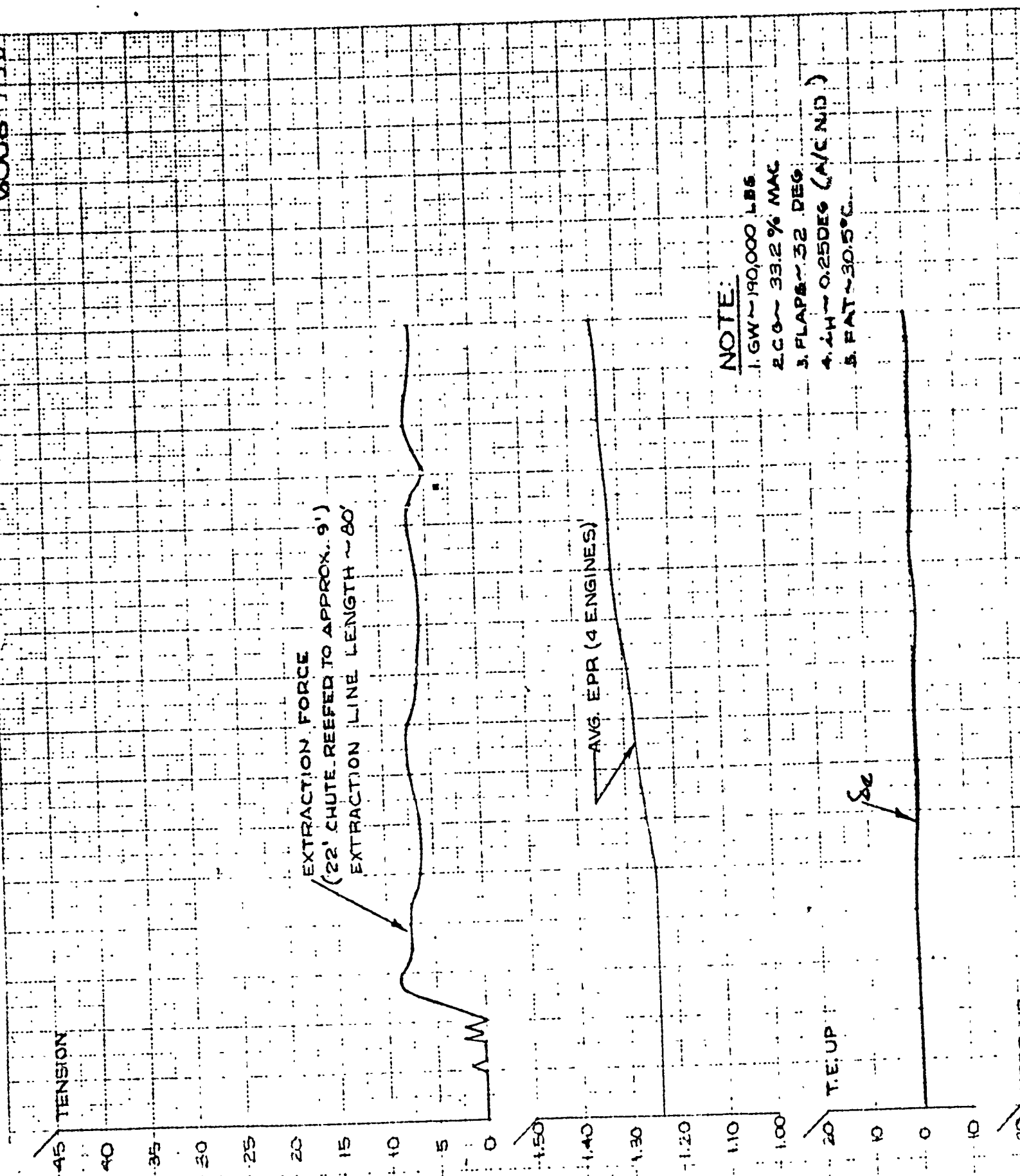
ELEVATOR POSITION

DEGREES

T.E. UP

NOTE:

1. GW ~ 190,000 LBS
2. CO ~ 33.2% MAC
3. FLAPS ~ 32 DEG
4. \dot{M} ~ 0.25 DEG (A/C MID)
5. FAT ~ 30.5°C



REVISÉ 12-9-65
MMH

6008-117A

TENSION

45

40

35

30

25

20

15

10

5

0

EXTRACTION CHUTE DRAG LOAD

~ POUNDS X 10⁻² ~

EXTRACTION FORCE
122' CHUTE REEPED TO 9', EXTRACTION LINE LENGTH ~ 50'

ENGINE PRESSURE

1.50

1.40

1.30

1.20

1.10

1.00

RATIO

AVG. EPR (H ENGINES)

ELEVATOR POSITION

20

10

0

10

20

DEGREES

T.E. UP

NOSE UP

8°

NOTE:

1. GW ~ 177,000 LBS

2. CO ~ 33.5% MAC

3. FLAPS ~ 25 DEG

4. TH ~ 10° DEG (A/C N.U.)

5. FAT ~ 33 °C

DATE 8-10-65
CHECKED BY *fu*

LOCKHEED GEORGIA COMPANY
LOCKHEED AIRCRAFT ENGINE DIVISION

MODEL C-141A
PAGE C-36

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAG 6008
FLIGHT 160 DATE 7-27-65

RUN 1

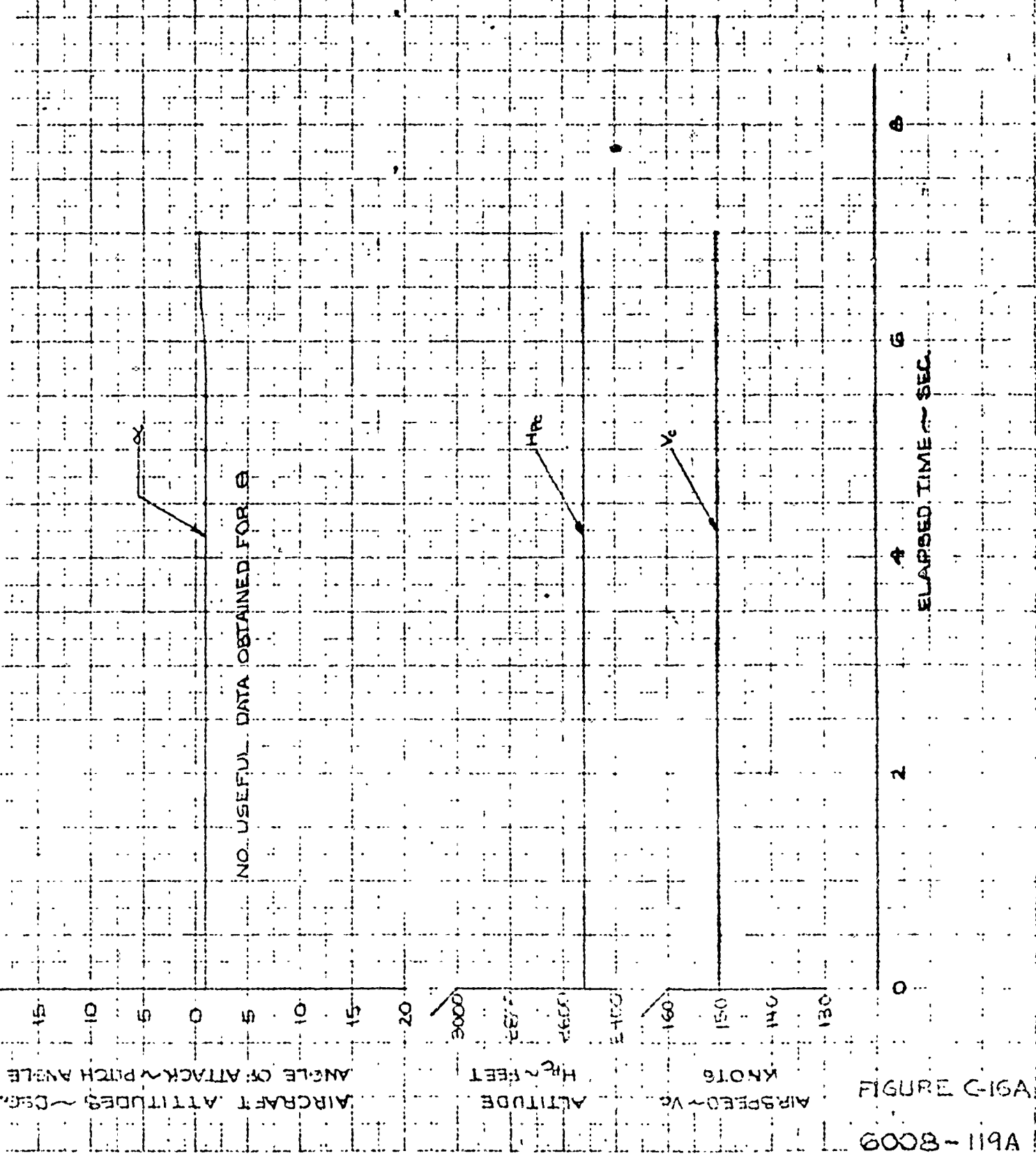


FIGURE C-16A
6008-119A

6008-11RB

TENSION

45

EXTRACTION CHUTE DRWG LOAD
POUNDS X 10⁻³

EXTRACTION ORCE
1 22' CHUTE REEFED TO 9'
EXTRACTION LINE LENGTH ~ 80'

ENGINE PRESSURE

1.50

RATIO

AVG. E.P.R. (4 ENGINES)

T.E. UP

20

ELEVATION POSITION

DEGREES

50

NOTE:

1. GW ~ 175,000 LBS
2. CG ~ 33.2 % MAC
3. FLAPS ~ 25 DEG
4. \dot{M} ~ 100 DEG (A/CNU)
5. FAT ~ 30 °C

PREPARED BY: MHW
 DATE: 8-10-65
 CHECKED BY: *[Signature]*

LOCKHEED GEORGE AIR COMPANY
 1000 W. 10th St. Suite 100
 Fort Worth, Texas 76102

REPORT NO. ER 5475
 MODEL C-141A
 C-37

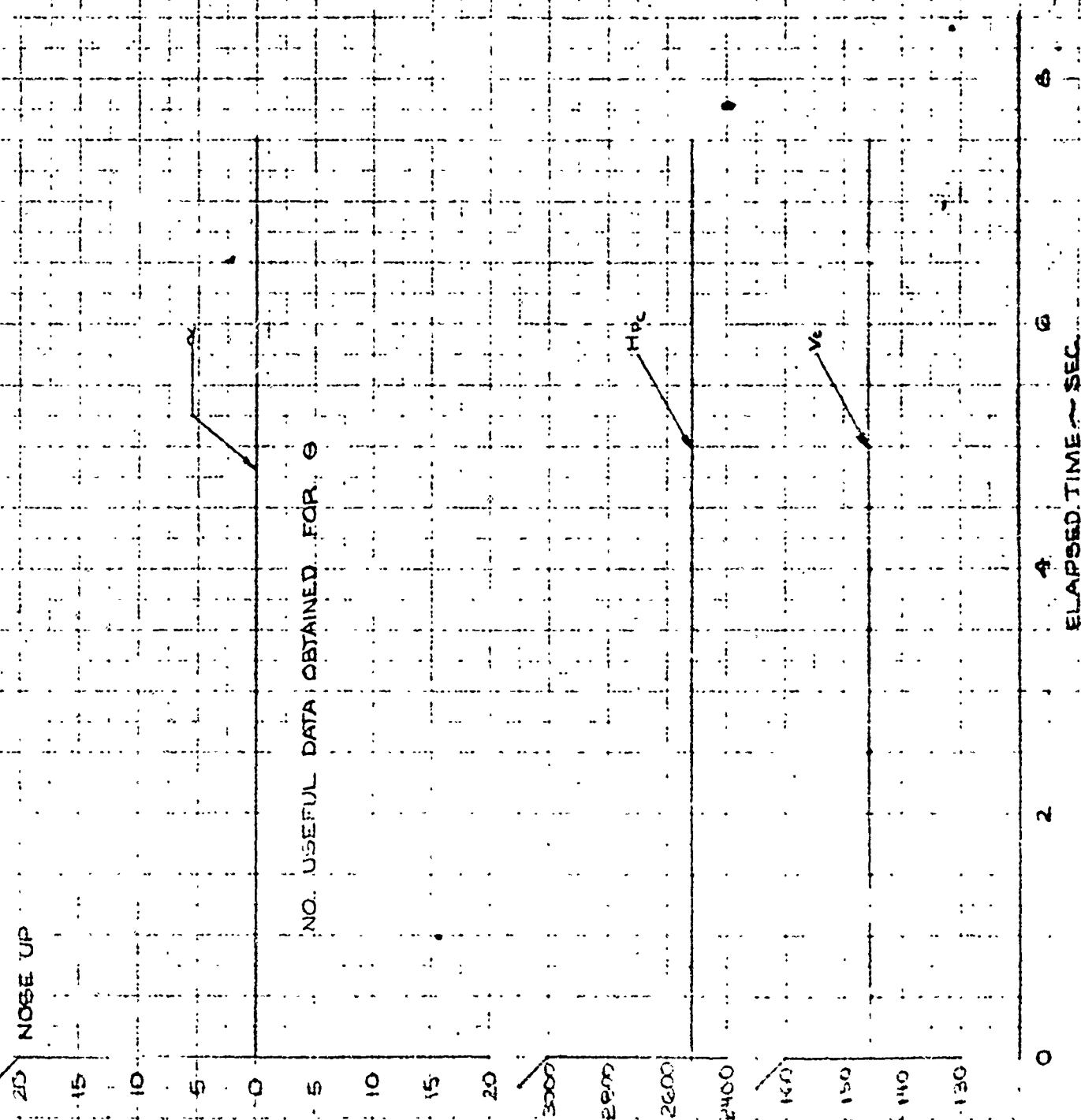
ADS EXTRACTION CHUTE TOW TEST

MODEL C141A

AF63-8077 LAC 6008

FLIGHT 160 DATE 5-27-65

RUN 2



ANGLE OF ATTACK ~ PITCH ANGLE

ALTITUDE

AIR SPEED ~ V0

FIGURE 6008

8008-198

2008-119C

45 TENSION

EXTRACTION CHUTE DRAG LOAD

~ POUNDS X 10⁻³ ~

EXTRACTION FORCE
124 CHUTE (UNREEFED)
EXTRACTION LINE LENGTH ~ 80'

AVG EPR (ENGINES)

ENGINE PRESSURE

RATIO

ELEVATOR POSITION

DEGREES

20 T.E. UP

20 NOSE UP

NOTE:

1. GW ~ 173,000 LBS
2. CO ~ 53.0 % MAC
3. FLAPS ~ 16 DEG
4. AH ~ 13.5 DEG (A/C NB)
5. EAT ~ 32.5 °C

50

PREPARED BY

MHW

DATE 8-10-65

CHECKED BY

JWO

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO

ER 5473

MODEL C-141A

PAGE C-38

ADS EXTRACTION CHUTE TOW

TEST

MODEL C141A

AF63-8077

LAC 6008

FLIGHT 160

DATE 7-27-65

RUN 3

NOSE UP

20

15

10

5

0

5

10

15

20

ANGLE OF ATTACK ~ PITCH ANGLE

AIRCRAFT ATTITUDES ~ DEG.

ALTITUDE

FT ~ FEET

AIR SPEED ~ KC

KT

FIGURE 61C

6008-1190

NO USEFUL DATA OBTAINED FOR 9

MP

MP

6

4

2

0

ELAPSED TIME ~ SEC.

GOOB-ADS173

TENSION

45

40

35

30

25

20

15

10

5

0

EXTRACTION CHUTE DRAG LOAD

~ POUNDS X 10⁻³

EXTRACTION FORCE
1-24' REINFORCED CHUTE
REEPED TO 18' - 80' EXT. LINE

AVERAGE EPR (4 ENGINES)

1.50

1.40

1.30

1.20

1.10

1.00

ENGINE PRESSURE

RATIO

ELEVATOR POSITION

DEGREES

20

0

0

10

20

T.E. UP

NOSE UP

NOTE:

1. GW ~ 19500 LBS
2. CG ~ 32.8 % MAC
3. FLAPS ~ 17 DEG
4. α ~ 1.0 DEG (A/E N.D.)
5. FAT ~ 25 °C

δ_{α}

PREPARED BY: R. I. D.
DATE: 9-28-65
CHECKED BY: JWP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AERIAL CORPORATION

REPORT NO. ER 5473
MODEL: C-141A
PAGE: C-39

ADS EXTRACTION CHUTE TOW TEST

MODEL C141A
AFG3-8077 LAC 6008
FLIGHT 187 DATE 9-28-65

RUN 1

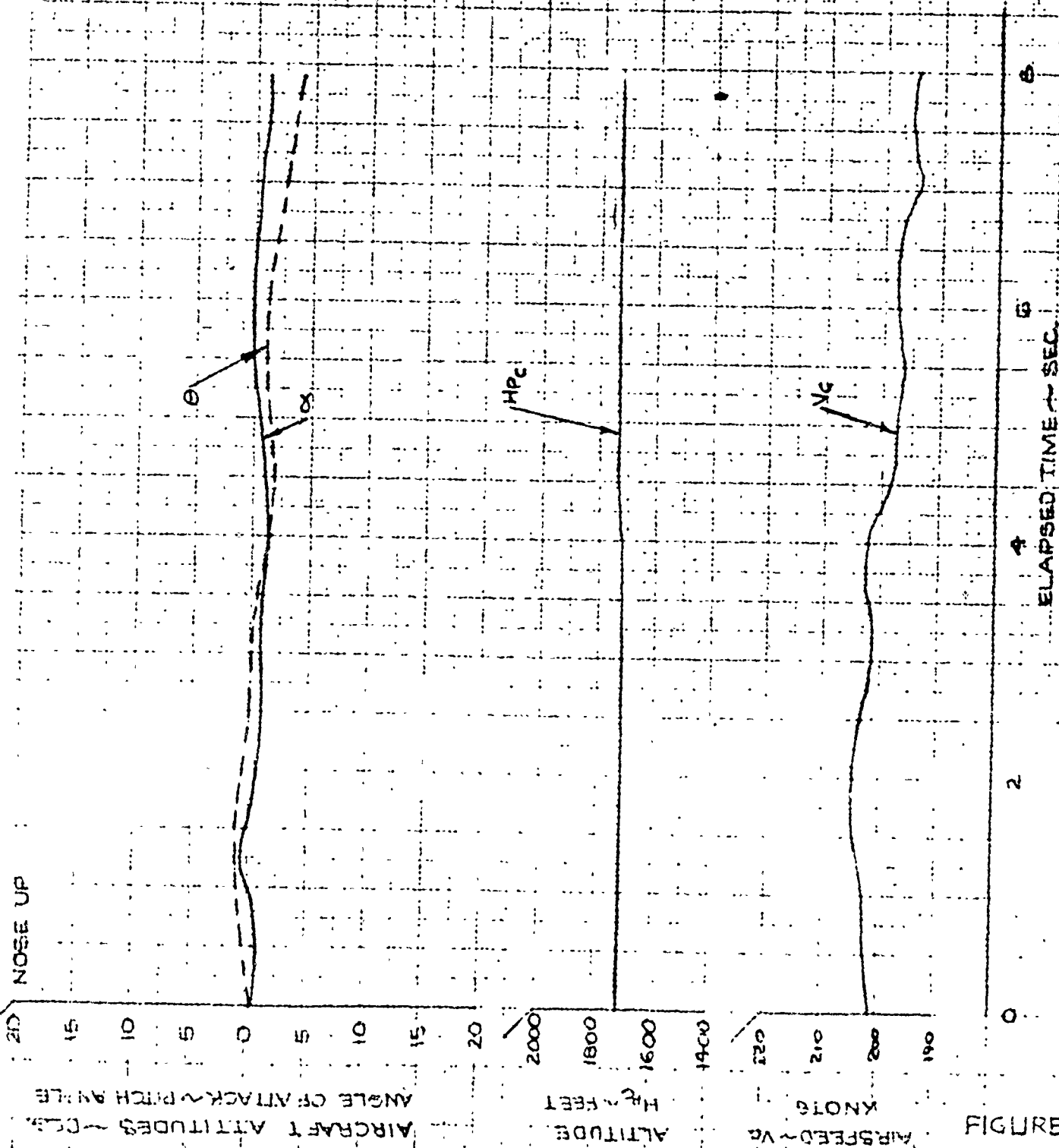


FIGURE C17A

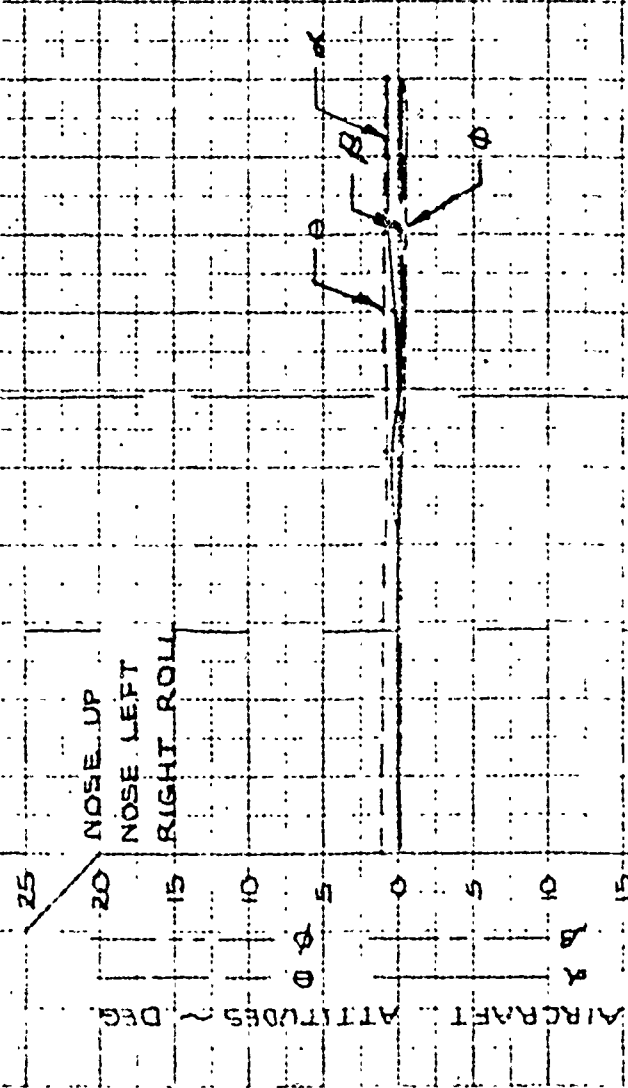
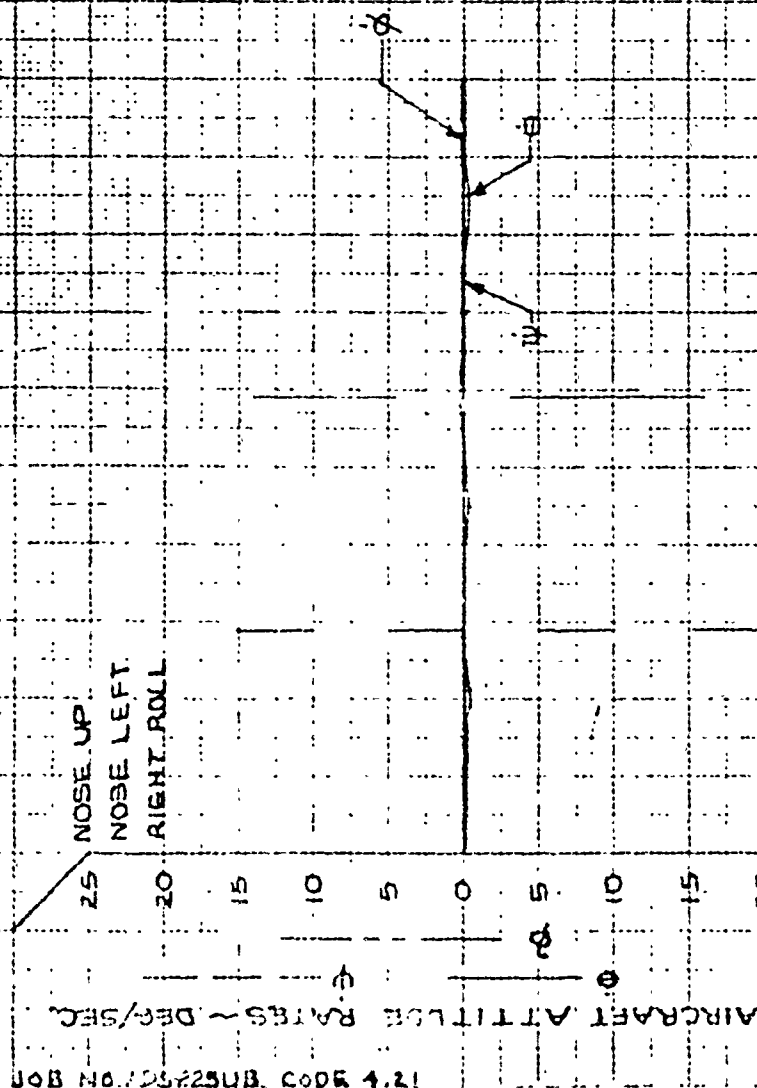
6008--AD173
REVISED 12-9-65
MBH

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. ER 5473
MODEL C-141A
PAGE D-1

APPENDIX D

6058
ADS 51A



JOB NO. 105225 SUB. CODE 4.21

AIRCRAFT ATTITUDES ~ DEG

AIRCRAFT ATTITUDE RATES ~ DEG/SEC

NOSE UP
NOSE LEFT
RIGHT ROLL

NOSE UP
NOSE LEFT
RIGHT ROLL

PREPARED BY **RSA**
DATE **4-10-65**
CHECKED BY **[Signature]**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
MODEL **C-141A**
PAGE **D-2**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF638077 LAC 6008
TEST DATE **4-9-65**
FLIGHT **98** DROP NO.

SHEET **1** OF **5**

CARGO WT **2640 LBS**

FLY CONDITIONS

1. G.W. ~ 161,200 LBS
2. C.G. PRIOR TO DROP ~ 29.8% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.19 (4 ENGINES)
7. α ~ 0.2 DEG (A/C N.U.)

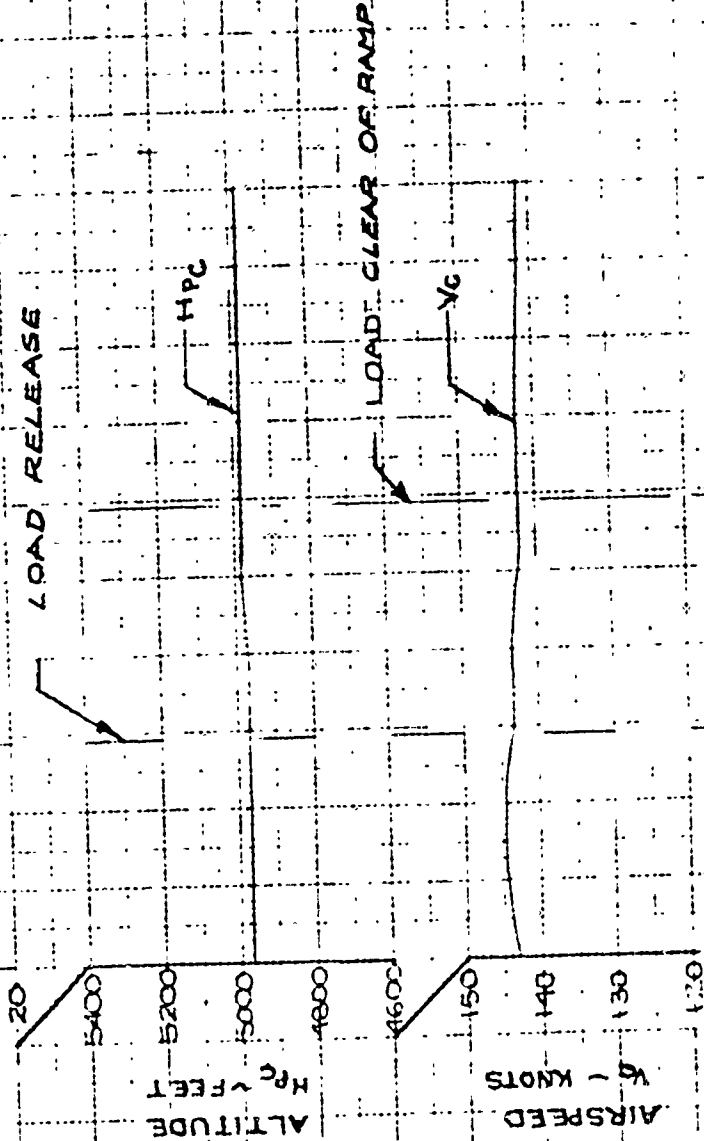
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 96 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 908
VERT. ~ WL 168

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 15 FT
3. RATED CHUTE FORCE/CARGO WT. 147
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE -1A



REVISED
12-14-65
MGM

REVISED
5-4-65 (W)

REVISED 1/6-11
JWD

6008
ADS 501

6008
ADS-508

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

20

15

10

5

0

5

10

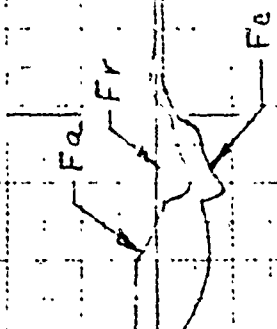
CONTROL FORCES - LBS.

JOB NO. ACS-R25UP. CODE 4.21

LEFT AILERON POSITION ~ DEG.

T.E. UP

50



DATE 9-10-65
 CHECKED BY JDW

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

PAGE D-3

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-119A

AF 63 8077

LAC 6008

TEST DATE 4-9-65

FLIGHT 98

DROP NO. 1

SHEET 2 OF 5

CARGO WT. 2640 LBS

NOTE:
 SEE FIGURED SHEET 1 OF 4
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

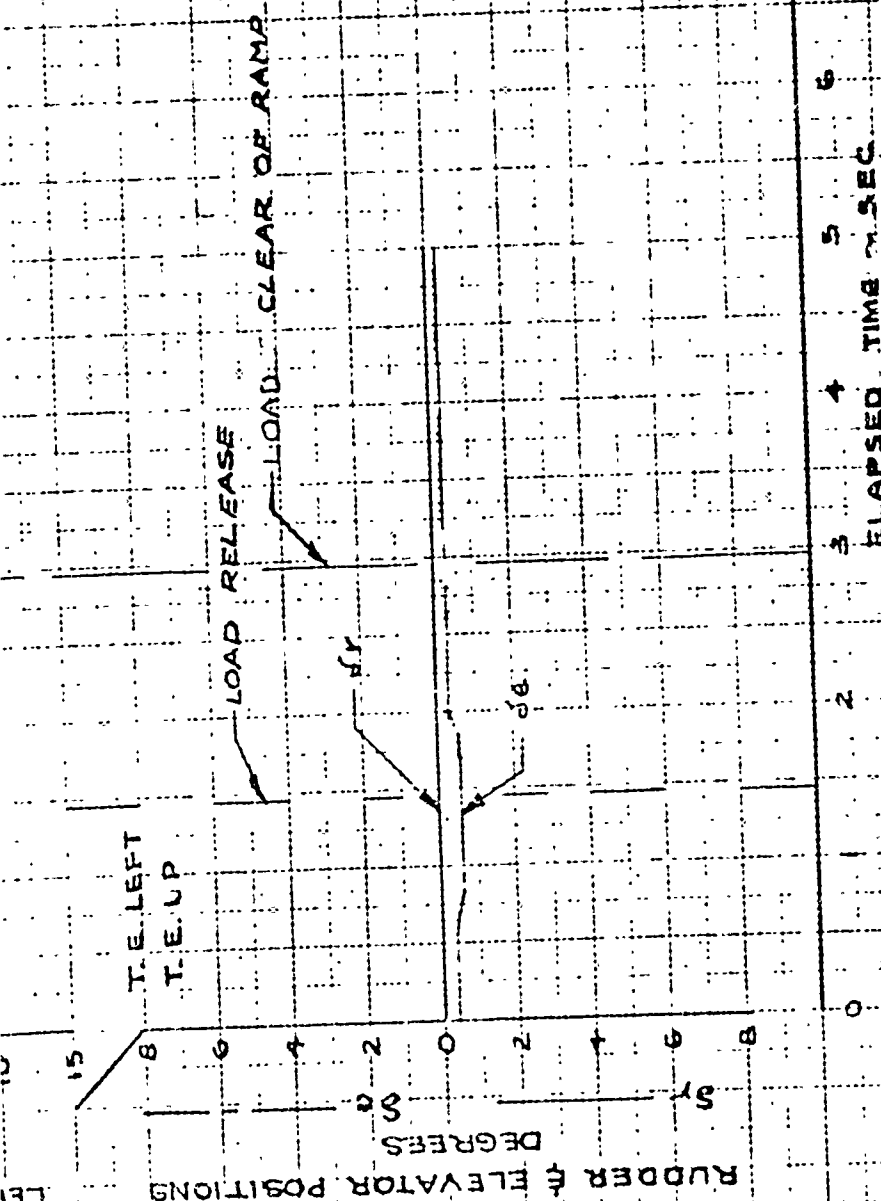


FIGURE D-13

6008

ADS 50

REVISED
 5-1-65 JMD

REVISED 4-1-65
 JMD

6006
ADS-50 C

NOSE UP

6

NOTE:

6 CALCULATED FROM NZ DATA.

UP ACCEL.

LOAD RELEASE

LOAD CLEAR OF RUNUP



REPORT NO. **TED**
 DATE **1-10-68**
 BY **JWS**

MARKED AT THE TIME OF THE TEST

REPORT NO. **ER 5473**
 MODEL **C-141A**
 D-4

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C141A**
AFG3-B077 **LAC 6008**
 TEST DATE: **4-9-65**
 FLIGHT **98** **DROP NO. 1**

SHEET **3** OF **5**

CARGO WT. 2640 LBS

NOTE:
 SEE FIGURE 1A SHEET 1 OF 4
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME - SEC.

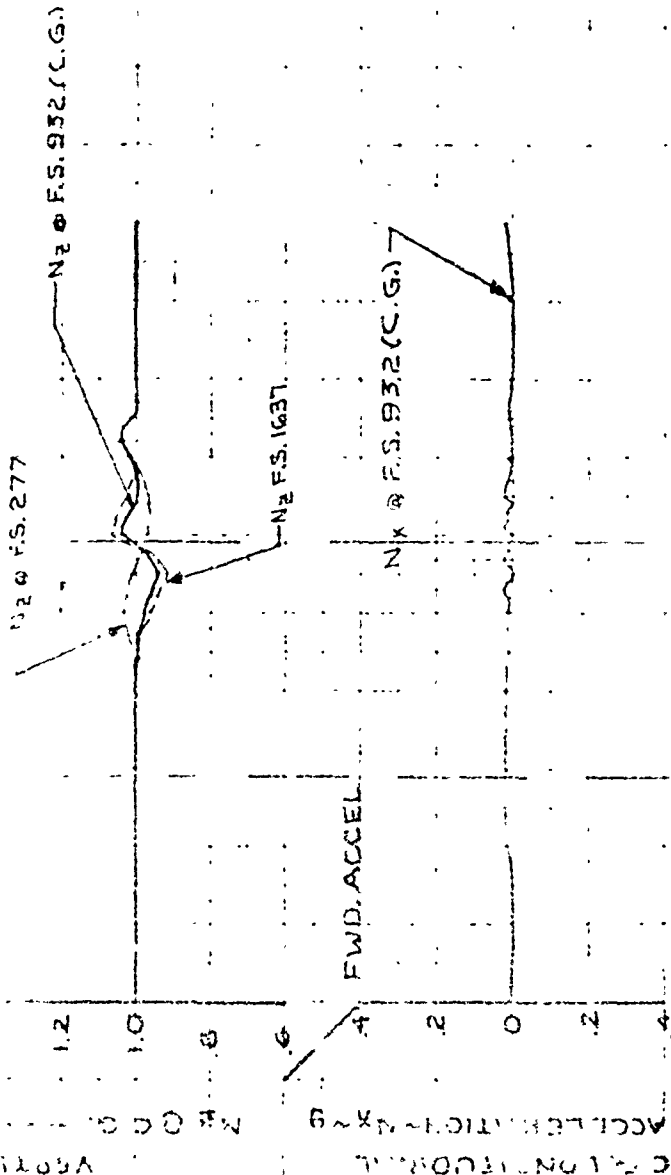
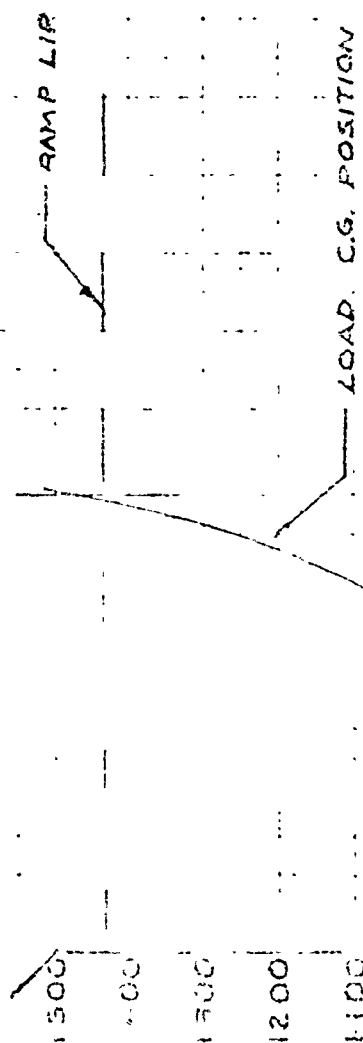


FIGURE 2-5

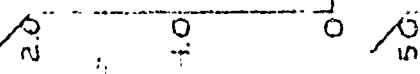
6003
 6003

6008
ADS50D



LOAD ACCEL.

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA.



PREPARED BY RSA
DATE 4-10-65
CHECKED BY JMO

LOCKHEED - LOUGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-5

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-9-63
FLIGHT 98 DROP NO. 1
SHEET 4 OF 5
CARGO WT. 2640 LBS.

NOTE:
SEE FIGURED 1 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

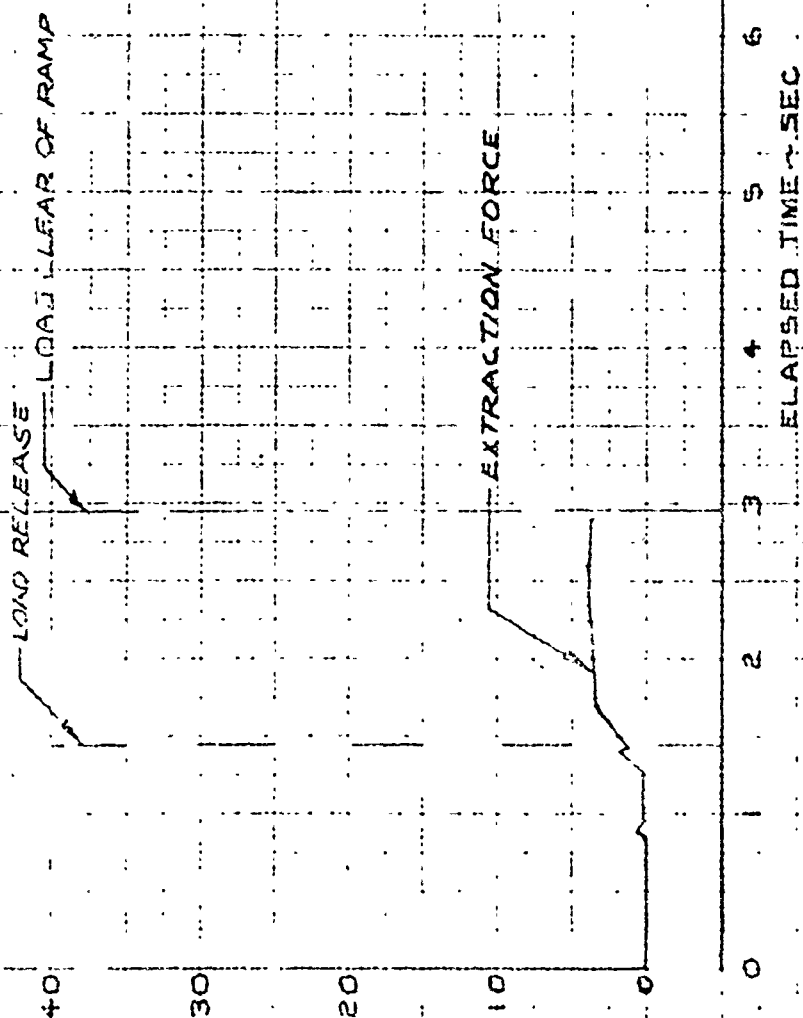


FIGURE D-10

EXTRACTION FORCE - LBS x 10^3

6008

ADS-50

REVISION 1
4-65 JMO

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM D-6
Checked			TITLE		Model C-141A	
Approved					Report No ER5473	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-5077 LAC 6008

FLIGHT 98 TEST DATE: 4-9-65

G.W. 161,800 LBS. A/S 145 KCAS

C.G. 29.8 %MAC ALT ~ 4,980 FT.

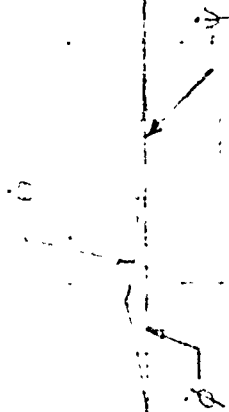
DROP WT ~ 2,640 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	0.7
2	ANGLE OF PITCH	"	1.1
3	C.G. VERT. ACCEL.	g's	1.04
4	C.G. LONG. ACCEL.	"	- 0.02
5	VERT. ACCEL. @ F.S. 277	"	1.03
6	VERT. ACCEL. @ F.S. 1632	"	1.06
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	12.13
8	VERT. BEND. @ F.S. 1568	"	2.18
9	BENDING ~ M'x @ HBL 44L	"	- 0.502
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	- 4.660
11	PITCH TRIM ACTUATOR ~ S _z	"	- 4.130
12	R.H. RAMP ACTUATOR LOAD	"	0.060
13	L.H. " " " "	"	0.060
14	R.H. SPIDER ARM LOAD	"	0.100
15	L.H. " " " "	"	0.100
16	R.H. PETAL DOOR ACTUATOR LOAD	"	5.800
17	L.H. " " " "	"	5.820
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0.230
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	0.420
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.030
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	3.880
25	CARGO LONG. ACCEL.	g's	1.47

FIG. D-1E
ADS-50E

6008
ADS#6A

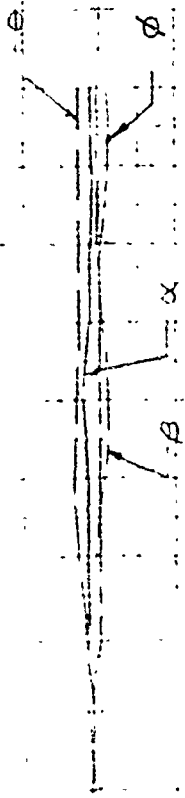
25 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL



LOAD RELEASE

LOAD CLEAR OF HAMP

25 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL



APPROXIMATE ATTITUDE - 1000 FT. ALTITUDE

FCW & JWP
DATE 4-3-65
JWP

REF ID: A5473
MODEL C-141A
D-7

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC. 6008
TEST DATE 4-1-65
FLIGHT: 93 DROP NO. 2

SHEET 1 OF 7

CARGO WT. 5840 LBS.

RUN CONDITIONS

1. G. W. ~ 166,100 LBS.
2. C. G. PRIOR TO DROP ~ 29.6 % MAC.
3. C. G. AFTER DROP ~ 30.3 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. \dot{M} ~ 0 DEG,

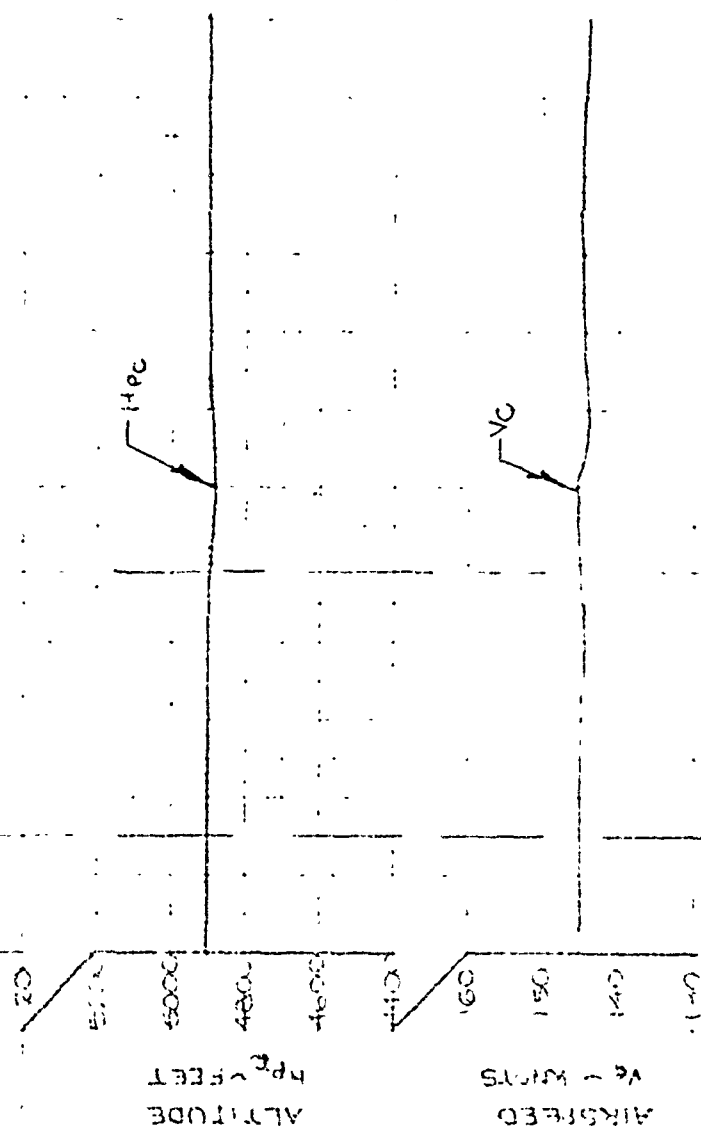
CARGO DESCRIPTION

1. TYPE CARRIER ~ PALLET
2. LENGTH ~ 96 IN.
3. CARGO C.G. POSITIONS
LONG. ~ FS 664
VERT. ~ WL 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 5 FT.
3. RATED CHUTE FORCE/CHUTE WT. ~
4. EXTRACTION CHUTE LENGTH ~ 10'

FIGURE DATA



6008
ADS-468

PULL
RIGHT ROLL
PUSH LEFT

70

60

50

40

30

20

10

0

10

20

30

40

T.E. UP

20

15

10

5

0

5

10

CONTROL FOR 150-1500
ON 600

LEFT AILERON POSITION 150-1500

F_{a}
 $F_{b} \pm F_{a}$

LOAD
RELEASE

LOAD CLEAR OF RAMP

S_{a}

PREPARED BY FCW
 DATE 4-3-65
 CHECKED BY *[Signature]*

REPORT NO. ER 5473
 MODEL C-141A
 DATE D-8

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
 AF 63 8077 LAC 6008
 TEST DATE 4-1-65
 FLIGHT NO 22 DROP NO 2

SHEET 2 OF 7

CARGO WT 5840 LBS

NOTE:
 SEE FIGURE 2 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME - SEC

See Jr

T.E. LEFT
 T.E. UP

RUDDER & ELEVATOR POSITIONING
 DEGREES
 15
8
6
4
2
0
2
4
6
8
10
15

FIGURE 7-2B

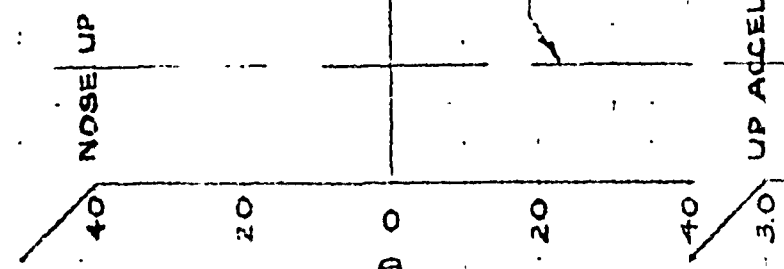
6008
 REVISED 5-4-65 JH
 REVISED 4/17/65 JH

6008
AD5 +6C

JOB NO. 6008
SUB CODE 15
TEST CODE 21

PITCHING ACCELERATION

DEG/ST



NOTE:

θ CALCULATED FROM N_z DATA

θ

LOAD CLEAR OF RAMP

AL ACCELERATIONS ~ 9
Nz OFS 2.11
Nz OFS 1637

Nz OFS 1637 NOT AVAILABLE

DATE 4-1-65

MODEL C-141A

ER 5412
MODEL C-141A
D-9

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-B077 LAC 6008
TEST DATE: 4-1-65
FLIGHT-93: DROP NO. 2
SHEET 3 OF 7
CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

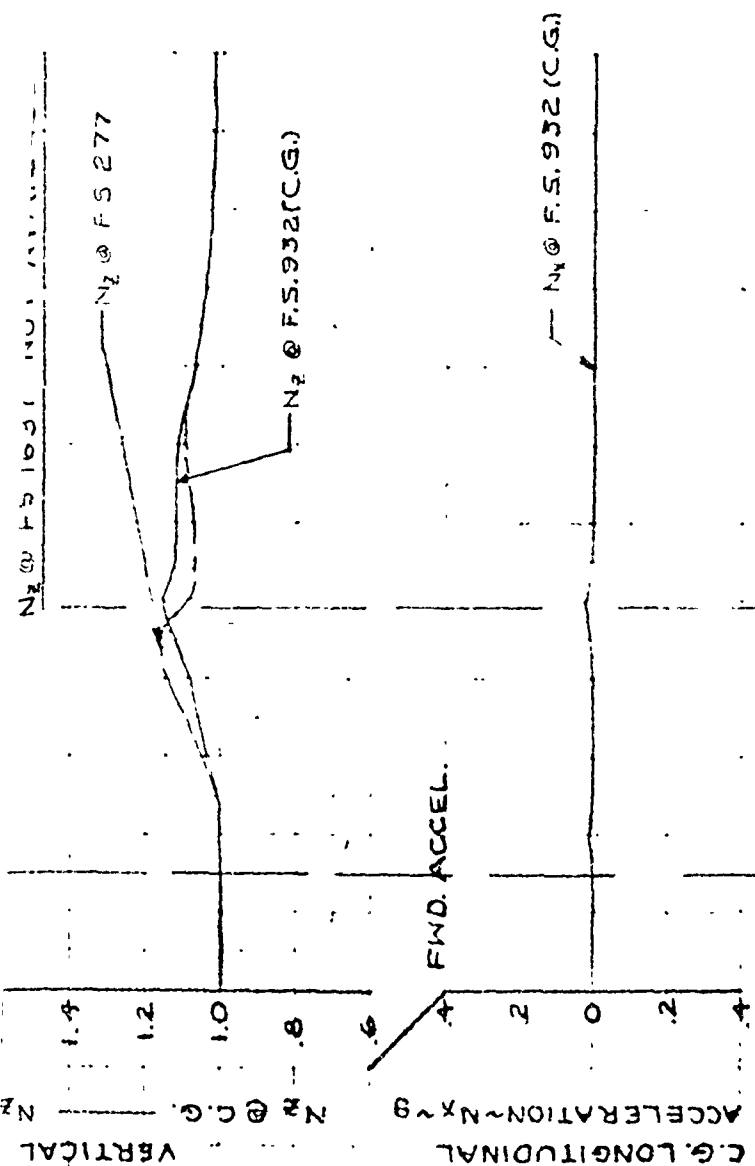
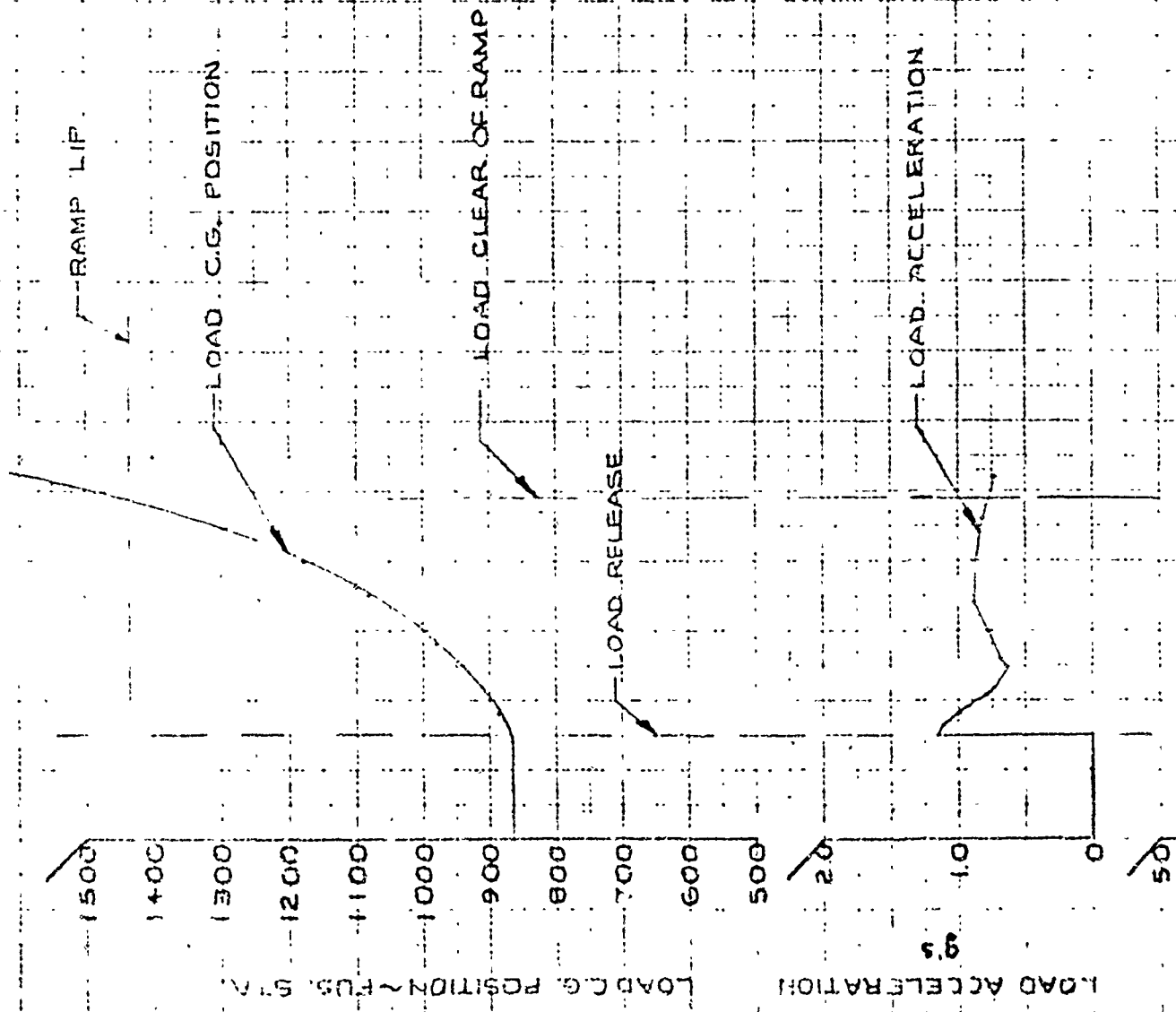


FIGURE D-2C

GOOD
ADP

REVISED 4/17/64
G. A. G. (m)

6008
ADS-460



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

PREPARED BY T.E.O.
DATE 4-3-65
CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-10

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-1-65
FLIGHT 93 DROP NO. 2
SHEET 4 OF 7
CARGO WT. 5840 LBS

NOTE:
SEE FIGURED-2 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

EXTRACTION FORCE

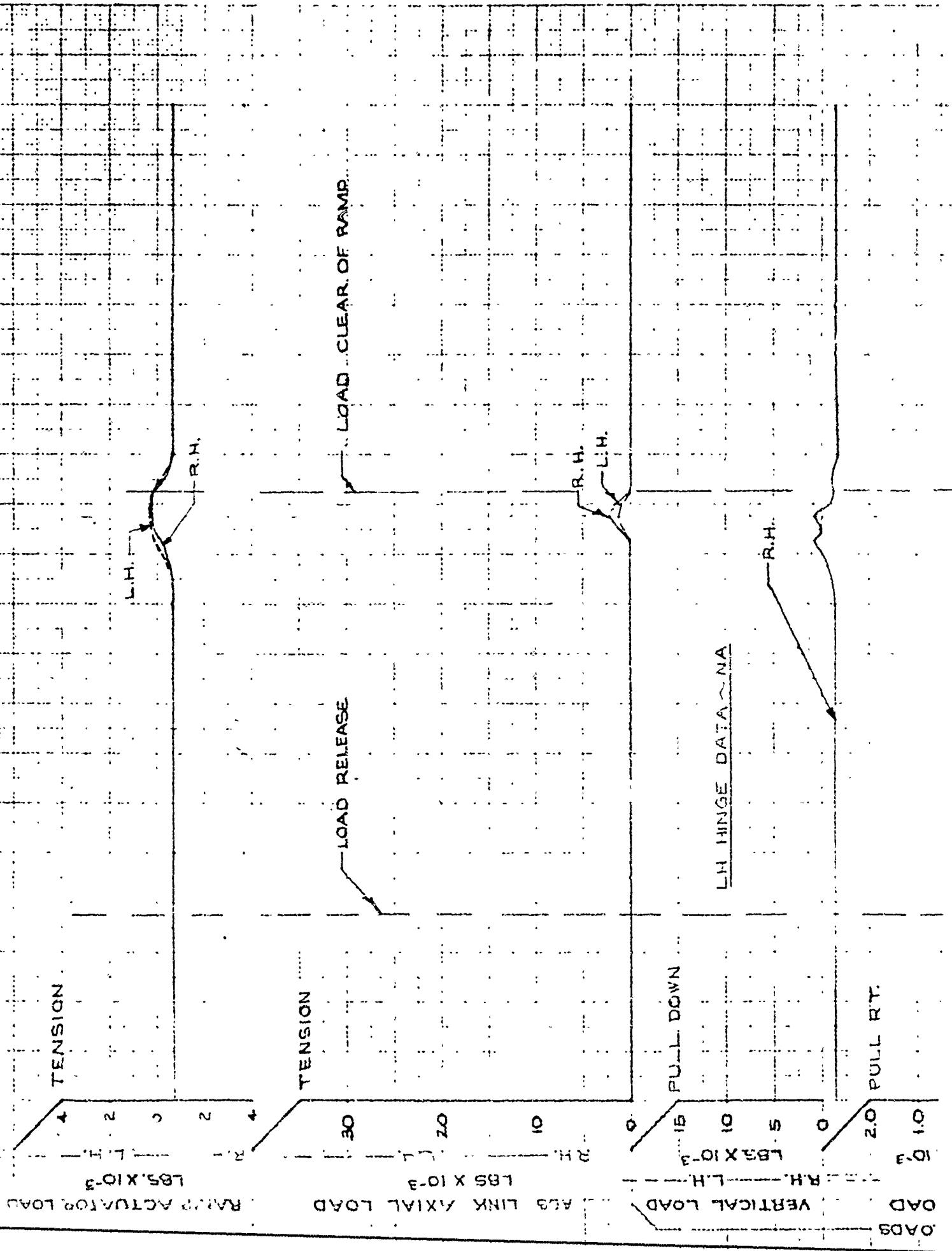
ELAPSED TIME - SEC

FIGURE D-2D

EXTRACTION FORCE - LBS $\times 10^3$

6008
ADP-11

6008-415468



FCW
DATE 4-5-65
High

ER 5473
MODEL C-141A
D-11

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE: 4-1-65
FLIGHT 93 DROP NO. 2

SHEET 5 OF 7

CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

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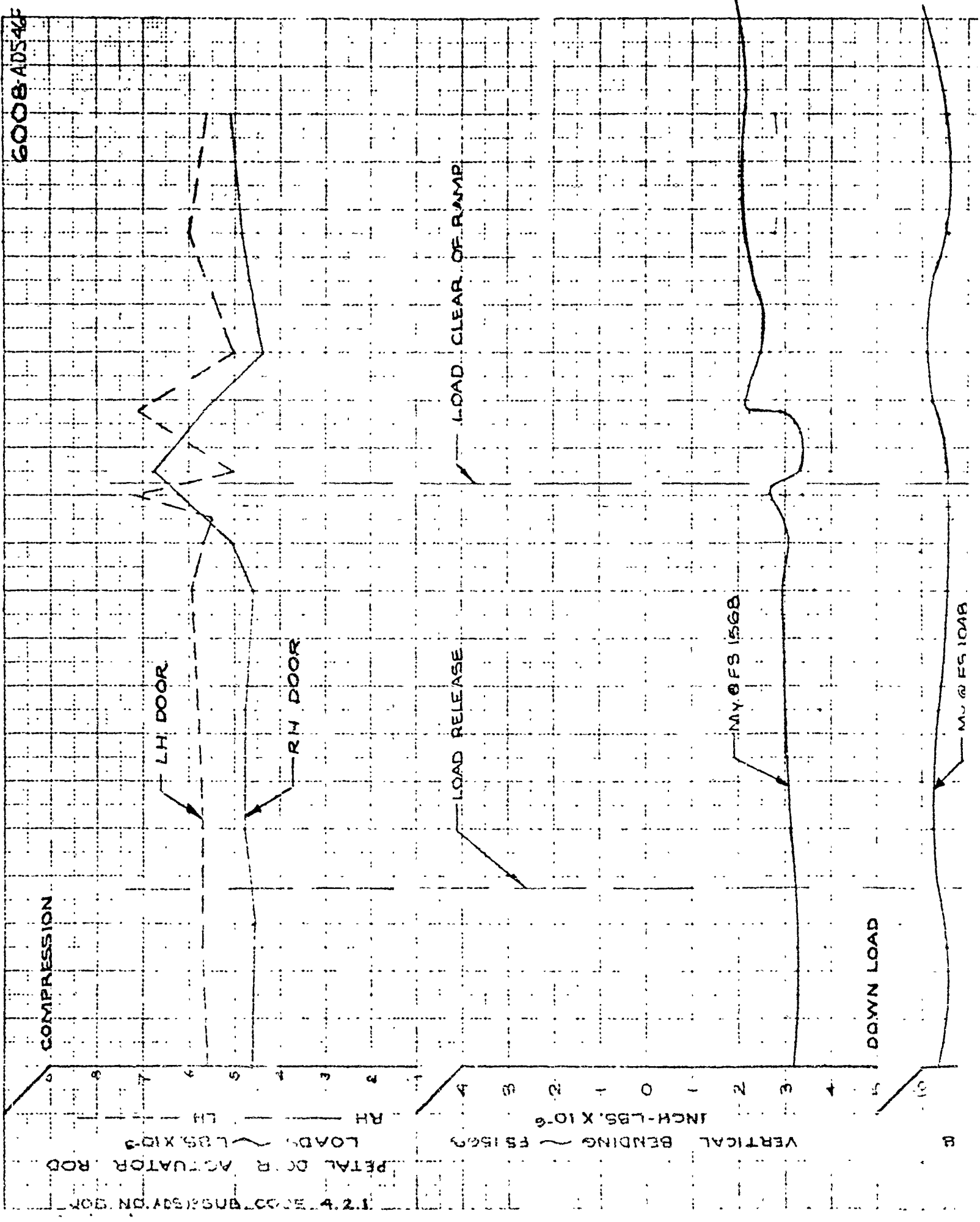
317

318

319

320

6008-AD546



COMPRESSION

LH DOOR

RH DOOR

LOAD RELEASE

LOAD CLEAR OF RAMP

FS 1568

DOWN LOAD

FS 1018

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10³

VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶

B

PREPARED BY
DATE 4-3-65
CHECKED BY *[Signature]*

L. L. SHEED GEORGIA COMPANY
AERIAL DELIVERY AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-12

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 4-1-65
FLIGHT 93 DROP NO. 2
SHEET 6 OF 7
CARGO WT. 5840 LBS.

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

DOWN LOAD

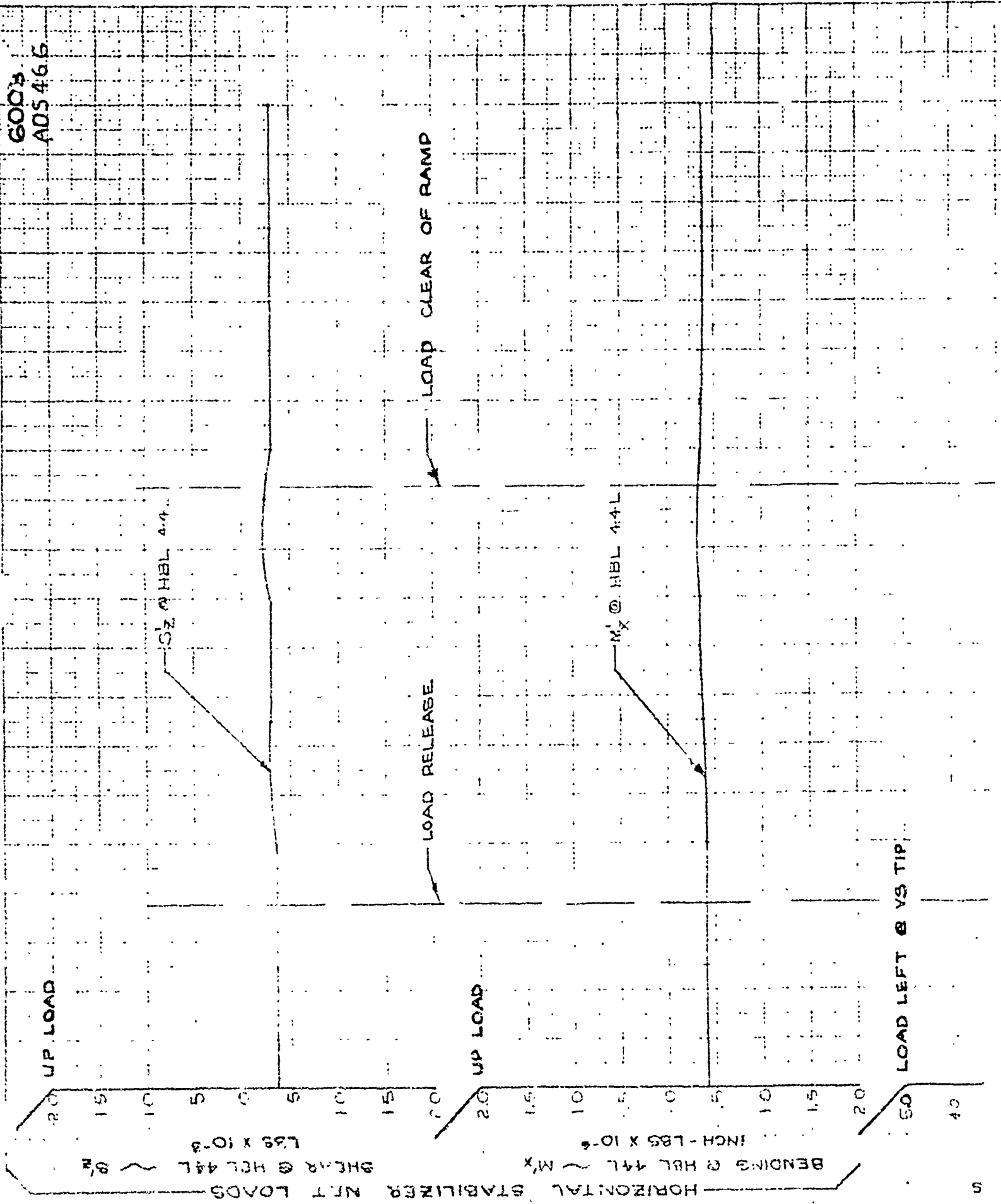
VERTICAL BENDING ~ FS. 104B
INCH-LBS. X 10⁶

FIGURE D-2F

6008
ADP-107

REVISED 5-4-65 JKL
REVISED 4/1/65 JKL

6003
ADS 466



JOB NO. 8 SUB CODE 4.2.1

PREPARED BY

DATE

4-3-65

FILE NO.

ER 5473 -

MODEL

C-141A

ALT

D-13

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 4-1-65

FLIGHT 93

DROP NO. 2

SHEET 7 OF 7

CARGO WT. 5840 LBS

NOTE:
SEE FIGURE D-2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-2G

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ MX
~ INCH-LBS X 10⁻⁶

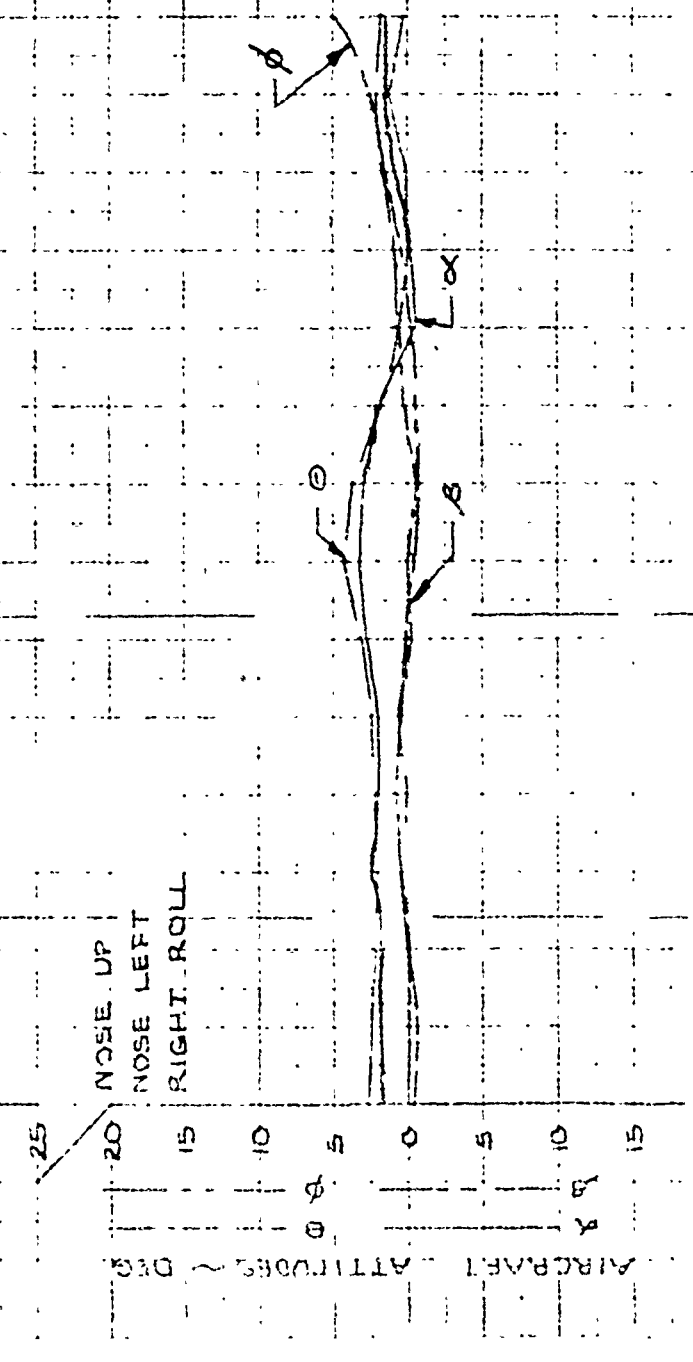
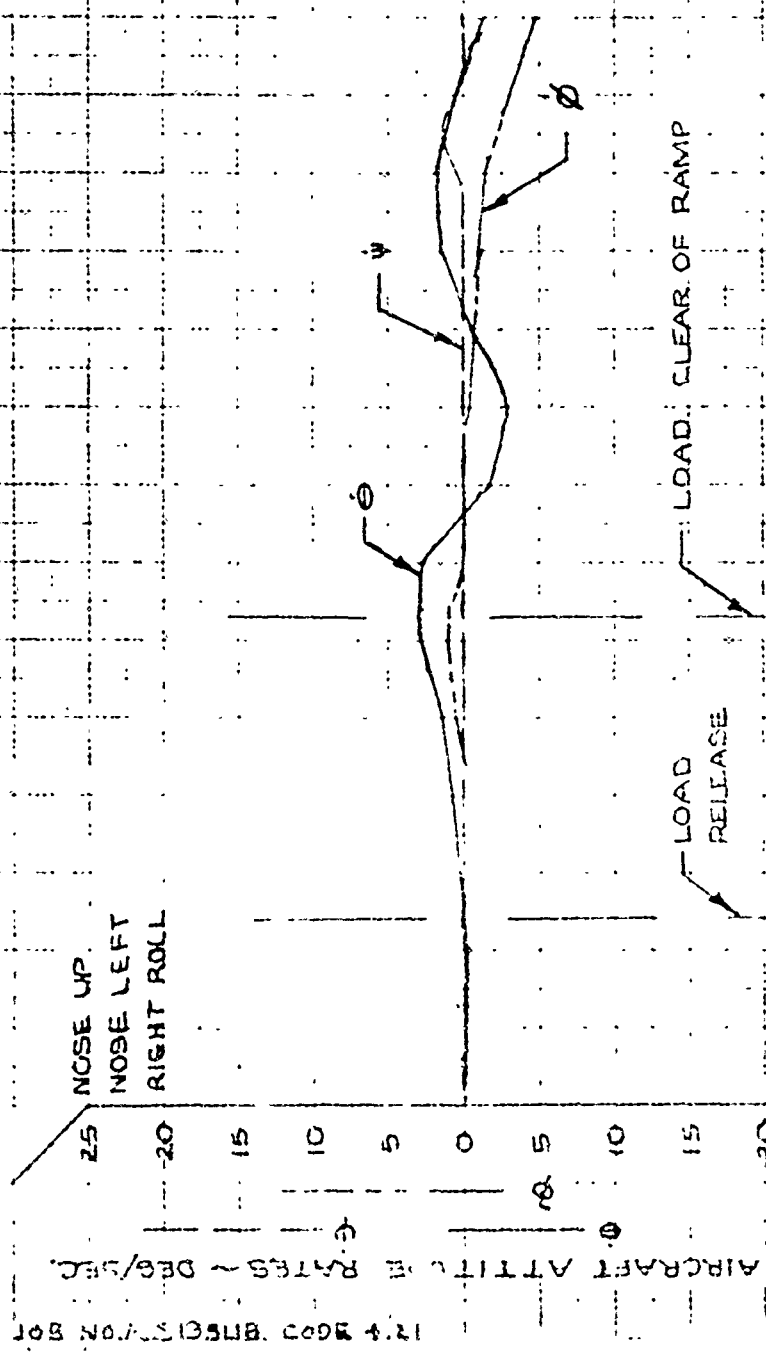
6008

ADS 46G

REVISED 5-4-65 7M

REVISED 7/1/65 JHP

6008
ADS 47A



PREPARED BY **RSA**
 DATE **4-2-65**
 CHECKED BY **[Signature]**

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-14**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF638077 **LAC 6008**
 TEST DATE **4-2-65**
 FLIGHT **94** DROP NO. **3**
 SHEET **1** OF **7**
CARGO WT. 10,650 LBS

RUN CONDITIONS

1. G.W. 170,500 LBS
2. C.G. PRIOR TO DROP 28.5% MAC
3. C.G. AFTER DROP 31% MAC
4. FLAPS 47%
5. GEAR UP
6. AVG. EPR 1.25 (4 ENGINES)
7. $\alpha \sim 1.0$ DEG (A/C N.U.)

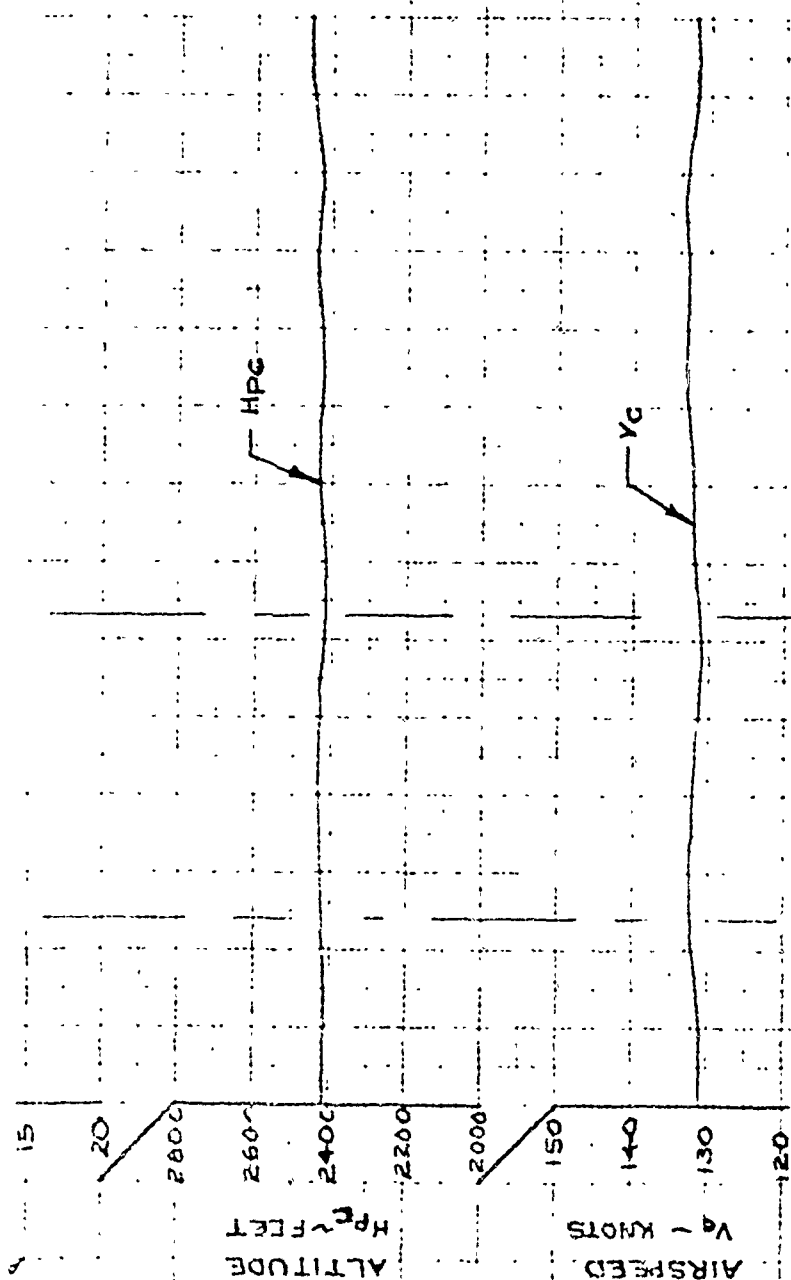
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 144 IN
3. CARGO C.G. POSITIONS
LONG. ~ F3 832
VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 2-3A



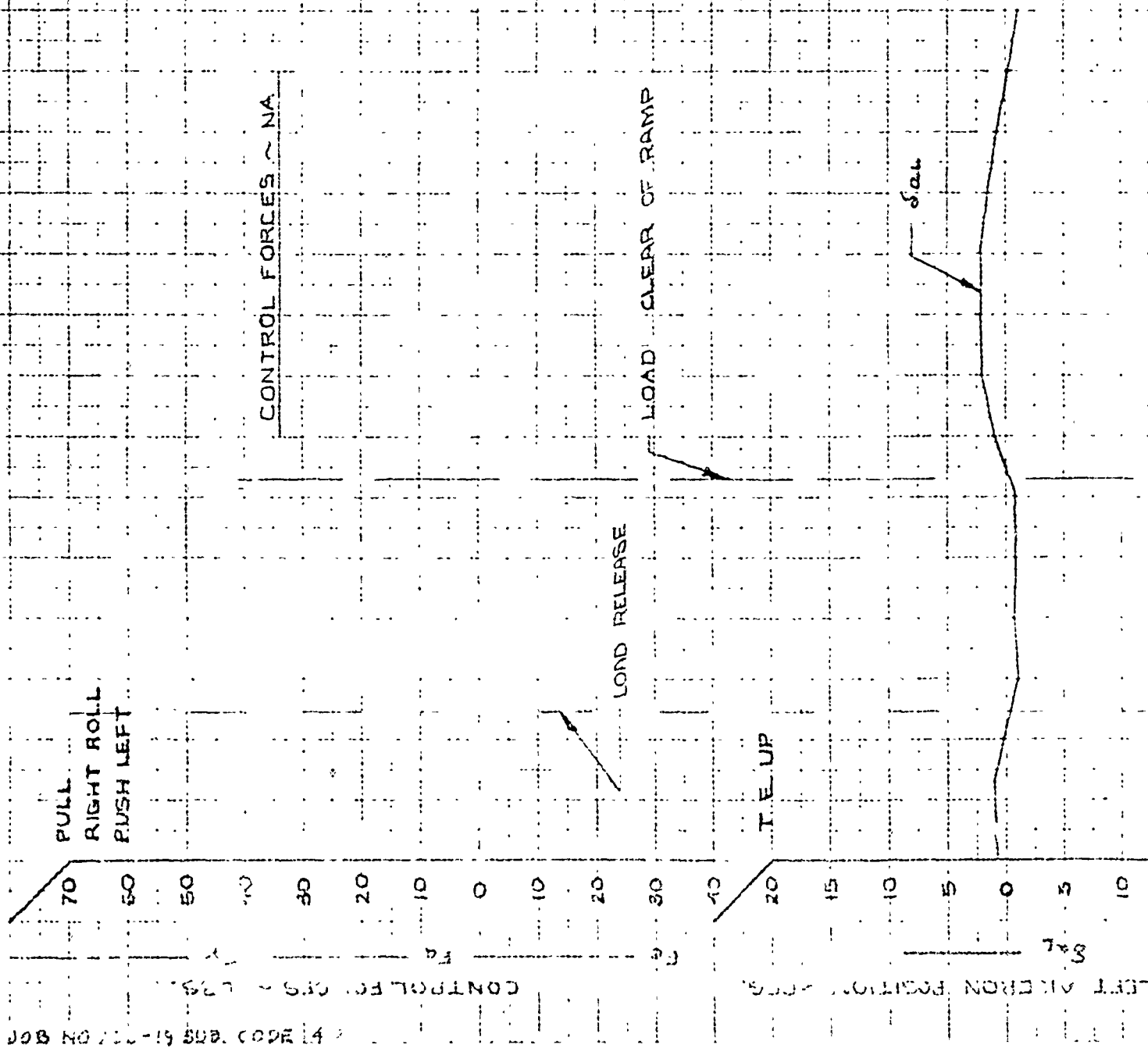
REVISED
 12-1-65
 MHW

REVISED
 5-4-65
 FW

6008
 ADS 47A
 REVISED
 JWP

62

6008
ADS41B



CONTROL FORCES ~ NA

LEFT AIRCRAFT POSITION - 8.4

41 2000 2008 61-117 ON 800

PREPARED BY R5A

DATE 4-5-65

REKED BY

ER 5473

C-141A

D-15

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 2077

LAC 6008

TEST DATE 4-2-65

FLIGHT 94

DROP NO 3

SHEET 2 OF 7

CARGO WT 10,650 LBS

NOTE:

SEE FIGURE 3 AS SHEET 1 OF 7.
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15

RUDDER & ELEVATOR POSITIONS
DEGREES
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-15
T.E. LEFT
T.E. UP

FIGURE 3B

6008

5473

REVISED

REKED BY

5-4-65

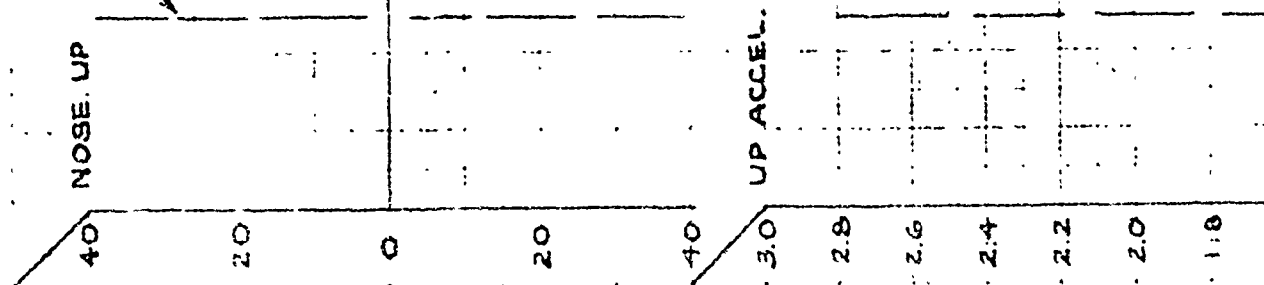
and

6008
AD 5476

JOB NO. AD-5 SUB. CODE 4.21

PITCHING ACCEL. ACTION

DEG/SEC



NOTE:

6. CALCULATED FROM N2 DATA

N2 @ FS 1637 ~ NOT AVAILABLE

N2 @ FS. 277

ACCELERATIONS ~ 9g

FS 277 --- N2 @ FS 1637

DATE 4-12-65
[Signature]

ER 0473
 C-141A
 D-16

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C141A
 AFG3-2077 LAC 6003
 TEST DATE: 4-2-65
 FLIGHT 94 DROP NO. 3

SHEET 3 OF 7

CARGO WT. 10,650 LBS

NOTE:
 SEE FIGURE 3 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

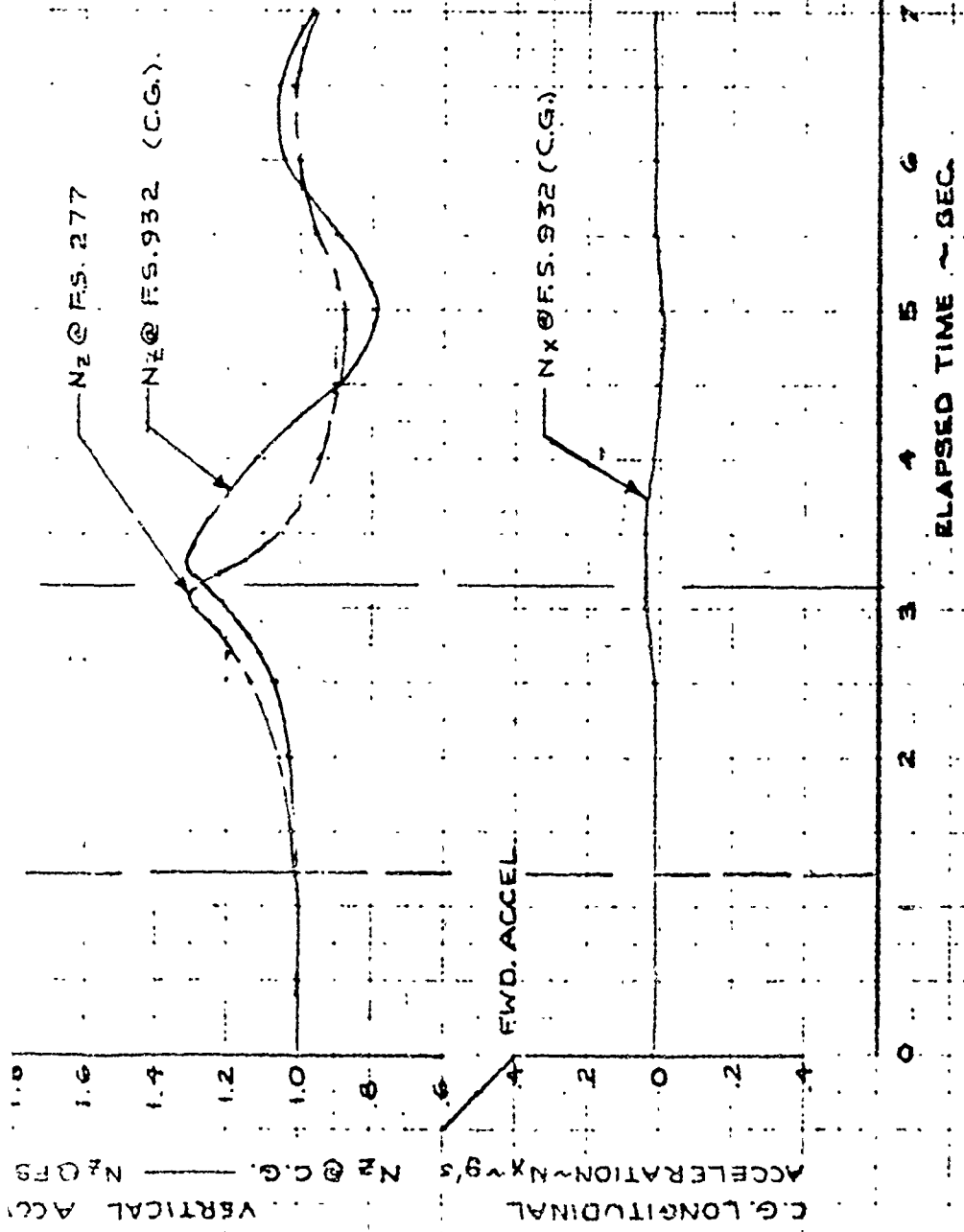


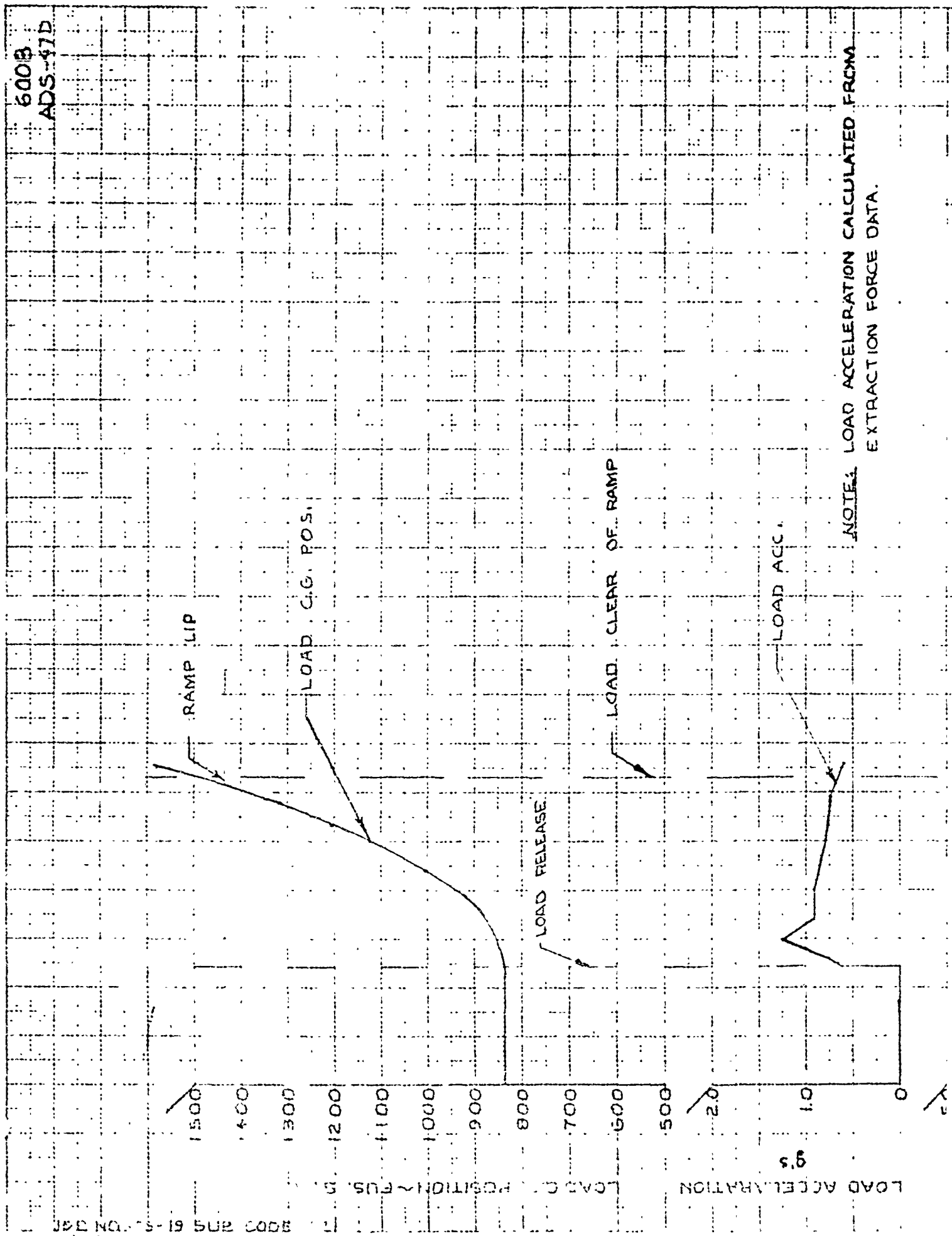
FIGURE D-3C

6003
 ADS 47C

REVISED 5-4-65 FWD
 REVISED 4/19/65 JWP

01-A

600B
ADS-47D



NOTE: LOAD ACCELERATION CALCULATED FROM
EXTRACTION FORCE DATA.

1. 5000 NUS 61-S-344

LOAD C.G. POSITION - INCHES

LOAD ACCELERATION

g's

PREPARED BY RSA
DATE 4-3-65
CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-17

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 4-2-65

FLIGHT 94 DROP NO. 3

SHEET 4 OF 7

CARGO WT. 10,650 LBS

NOTE:

SEE FIGURE 3, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

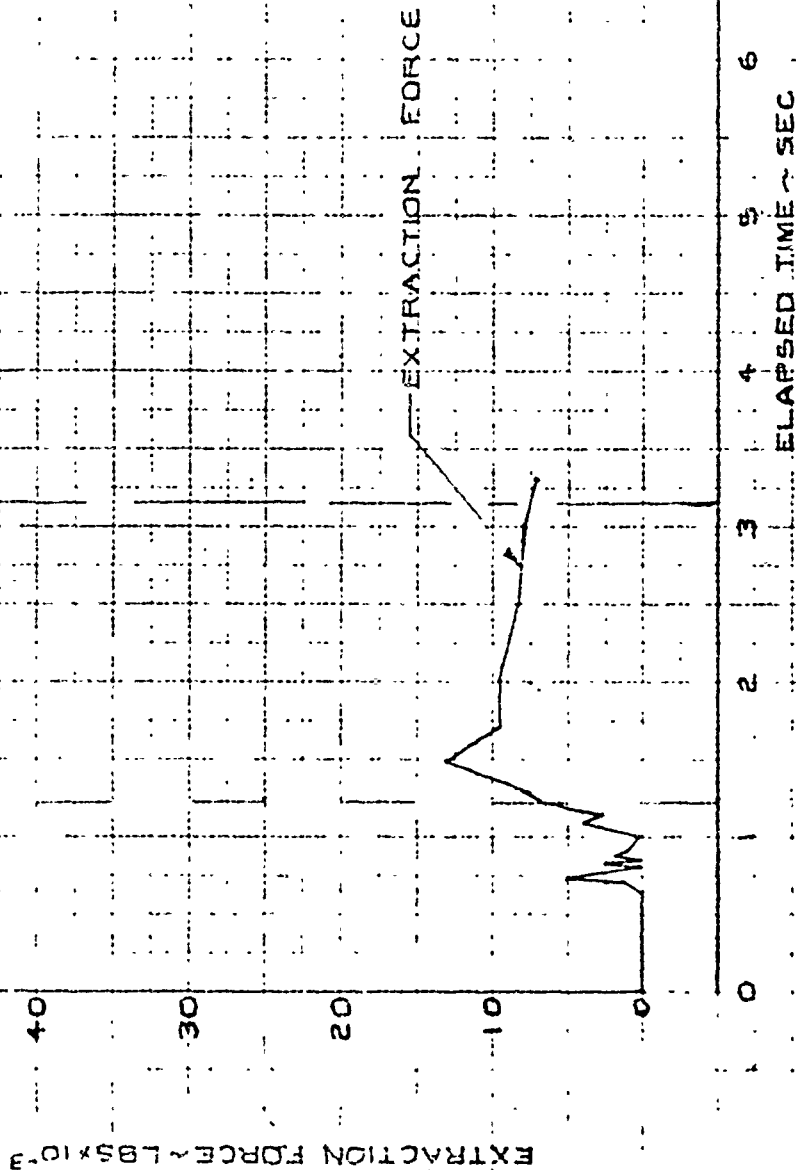


FIGURE 2-3D

6008-ADS-7D
REVISED 4/19/65
5-4-65 *[Signature]*

DATE 4-5-65

FR 5473
C-141A
D-18

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 4-2-65

FLIGHT 34

DROP NO. 3

SHEET 5 OF 7

CARGO WT. 10,650 LBS

NOTE:
SEE FIGURED-3A SHEET 1 OF 2
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD RELEASE

LOAD CLEAR OF RAMP

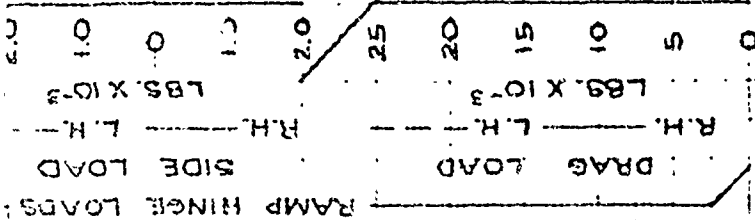
R.H. RAMP HINGE DRAG LOAD

L.H. HINGE DATA ~ NA

SIDE LOAD ~ NA

PULL AFT

FIGURE D-3E



6008

ADG 47E

REVISED

REVISED 4/15/65

5-4-65 FWD

JWD

6008
ADS 47F

COMPRESSION

LH

RH

LOAD ~ LBS. X 10⁻³

PETAL DOOR ACTUATOR ROD

1.2.4 - 0007BNS-5570N BOR

LH PETAL DOOR

RH PETAL DOOR

LOAD RELEASE

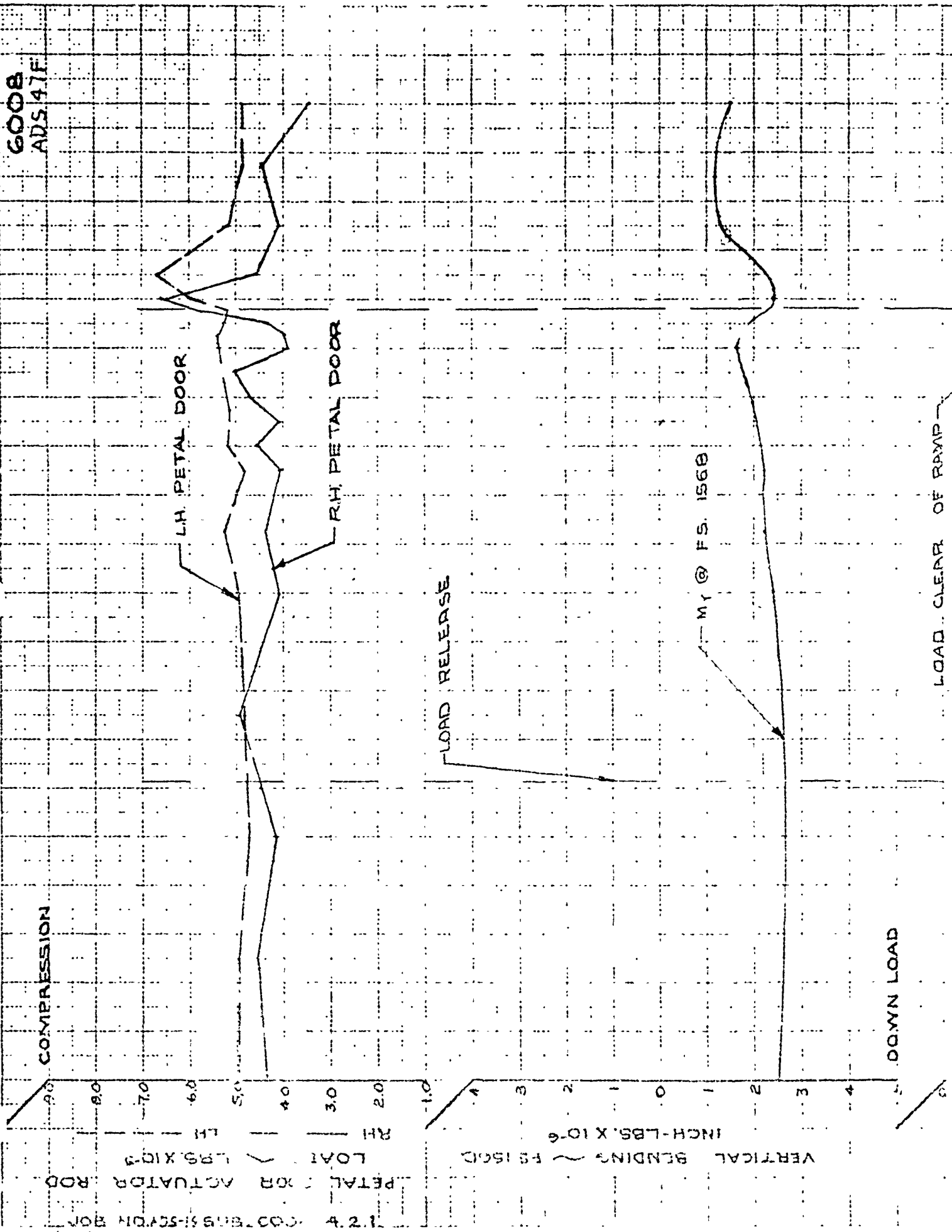
MY @ FS. 1560

DOWN LOAD

LOAD CLEAR OF RAMP

VERTICAL BENDING ~ FS 1560

INCH-LBS. X 10⁻⁶



PREPARED BY **RSA**
 DATE **4-5-65**
 CHECKED BY **[Signature]**

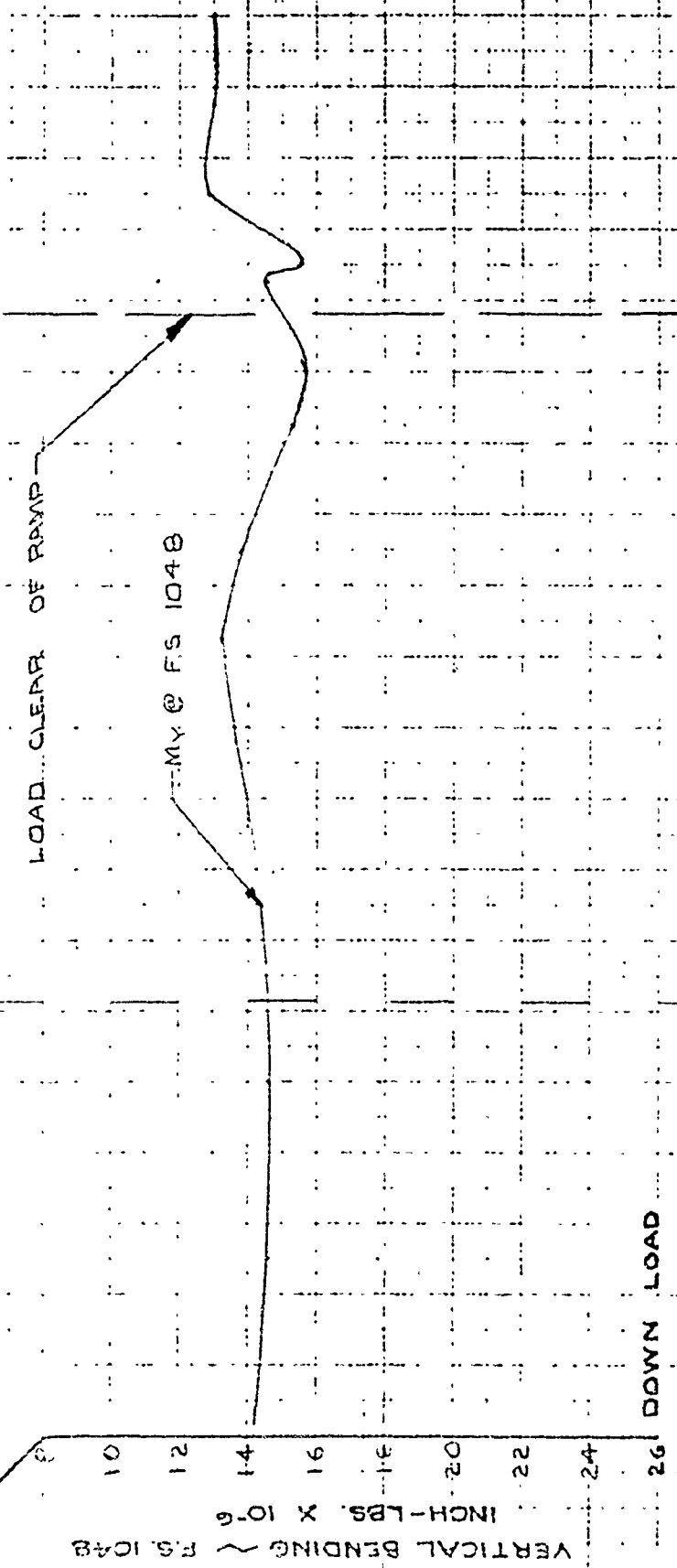
UNITED FLIGHT EQUIPMENT COMPANY
 1000 E. 10th St., Suite 100, Denver, CO 80202

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-19**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF63-8077 **LAC 6008**
 TEST DATE **4-2-65**
 FLIGHT **94** **DROP NO. 3**
 SHEET **6** OF **7**
CARGO WT. 10,650 LBS

NOTE:
 SEE FIGURED-3A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION AND EXTRACTION
 CHUTE DESCRIPTION.

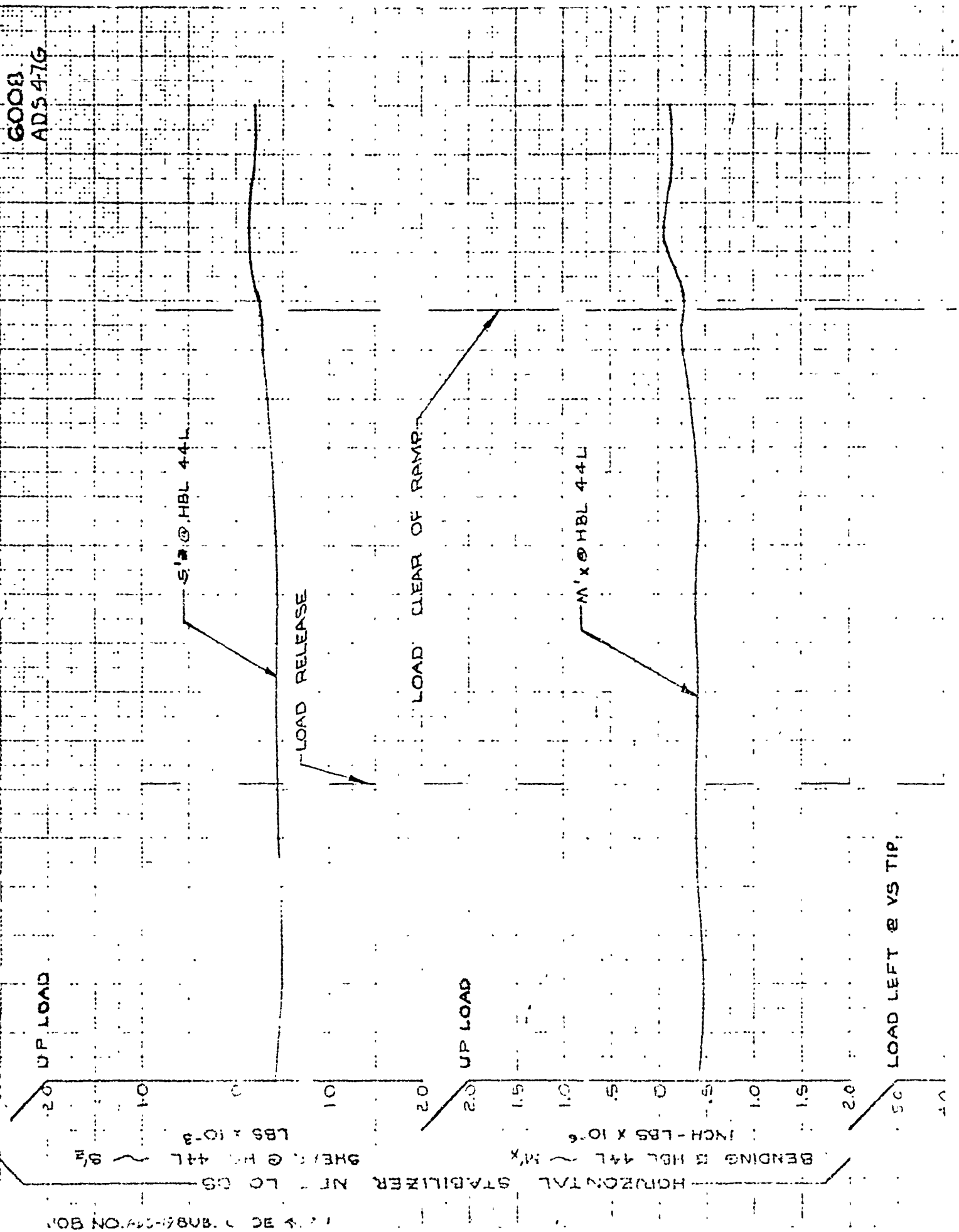


ELAPSED TIME ~ SEC.
 0
 1
 2
 3

FIGURE D-3F

6008
ADS-17F
 REVISED 5-4-65 **7AW** **JUP**

6008
AD5476



RSA
4-5-65
JMD

ER 5473
C-141A
D-20

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAF 6008

TEST DATE: 4-2-66

FLIGHT 94

DROP NO. 3

SHEET 7 OF 7

CARGO WT. 10,650 LBS

NOTE:

SEE FIGURE D-3 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-3G

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M_x
~ INCH-LBS X 10⁻⁶

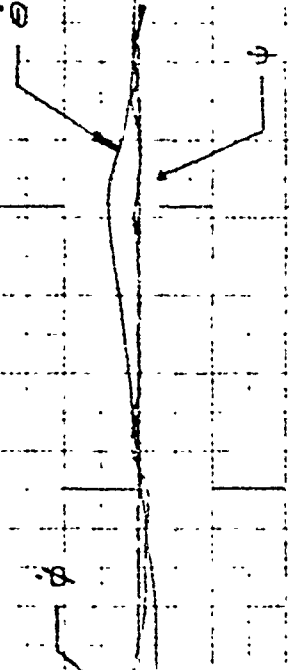
6008
ADS 17G

REVISED
5-4-65 JMD

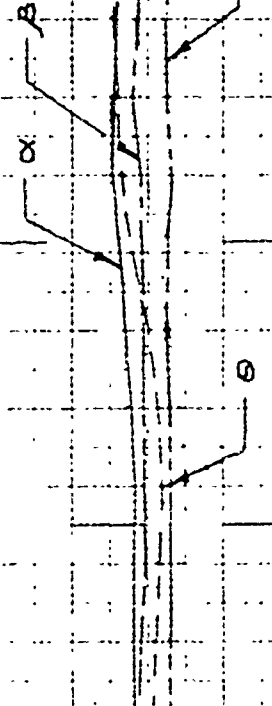
REVISED 4/9/65
JMD

6003
ADS 4AA

7.5 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL



20 NOSE UP
15 NOSE LEFT
10 RIGHT ROLL



PREPARED BY **RSA**
 DATE **4-6-65**
 CHECKED BY **JAD**

UNCLASSIFIED BY **NOVA COMPANY**
 AUTHORITY **12-19-65**

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-21**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF638077 LAC **6008**
 TEST DATE **4-4-65**
 FLIGHT **95** DROP NO. **4**
 SHEET **1** OF **5**
 CARGO WT. **10,300 LBS.**

RUN CONDITIONS

1. G.W. ~ 169,200 LBS.
2. C.G. PRIOR TO DROP ~ 28.0 % MAC
3. C.G. AFTER DROP ~ 30.0 % MAC
4. FLAPS ~ 27%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. α ~ 1.3 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ FS 851
 VERT. ~ WL 176

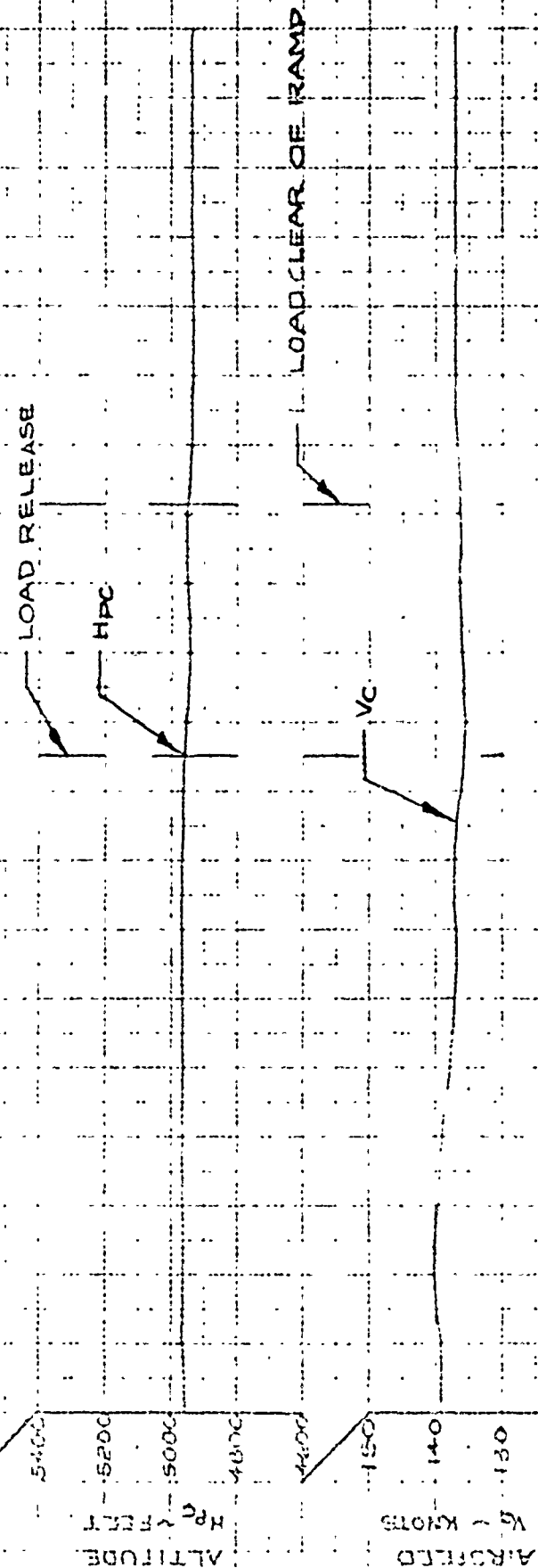
EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22" DIA. 24'
3. RATED CHUTE FORCE/C150 WT. ~ 1.4
4. EXTRACTION LINE LENGTH ~ 100'

NOTE

R.H. RESTRAINT LOCKS UNLOCKED
 INTENTIONALLY BY EMERGENCY
 RELEASE HANDLE

FIGURE 2-1A



ADVISED
 12-19-65
 MEN

ALD

6028
ADS 48 B

RIGHT ROLL
PUSH LEFT
PULL.

TELETYPE

CONFIDENTIAL

[illegible]

REPORT NO. FBI 5473
MODEL --- C-141A---
PAGE D-22---

LOAD CLEAR OF RAMP

LOAD RELEASE

LOAD. CLEAR OF RAMP.

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONING DEGREES

10
9
8
7
6
5
4

MODEL C-141A
AF 63.8077 LAC 600R
TEST DATE 4-6-65
FLIGHT 95 DROP NO. 4
SHEET 2 OF 5
CARGO WT. 10,300 LBS.

NOTE: SEE FIGURED SHEET 1 OF 3
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

P.H. RESTRAINT LOCKS UNLOCKED
INTENTIONALLY BY EMERGENCY
RELEASE HANDLE.

דברי חזונו

6003
ADS-46 E

RECEIVED
5-4-65 (AI)

6008
ADS 48 C

17.4 3003 B0532-SDVN 301

PITCHING ACCELERATION

DEG/SEC

NOSE UP

UP ACCEL.

NOTE:

$\dot{\theta}$ CALCULATED FROM N_2 DATA.

LOAD RELEASE

LOAD CLEAR OF RAMP

ACCELERATIONS ~ 9
FS 217
N2FS1637

PREPARED BY FCW

DATE 4-7-65

CHECKED BY *[Signature]*

LOCKHEED AIRCRAFT COMPANY

10000 WILLOW AVENUE, FORT WORTH, TEXAS 76101

APPROVED ER 5473

MODEL C-141A

DATE D-23

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE: 4-6-65
FLIGHT 93 DROP NO. 4

SHEET 3 OF 5

CARGO WT. 10300 LBS

NOTE:
SEE FIGURE 4 SHEET 1 OF 3
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

R.H. RESTRAINT LOCKS UNLOCKED
INTENTIONALLY BY EMERGENCY
RELEASE HANDLE.

ELAPSED TIME - SEC

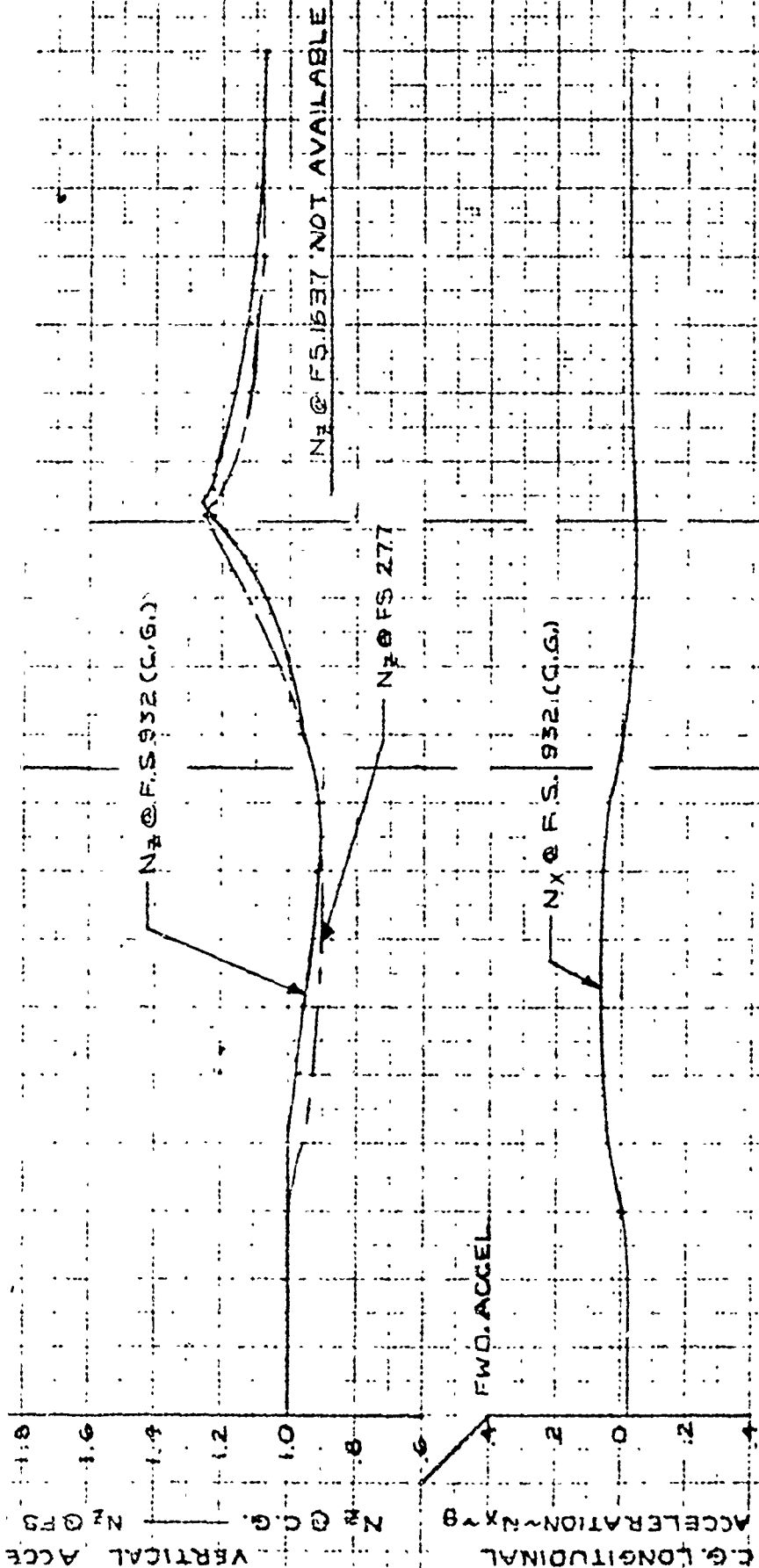


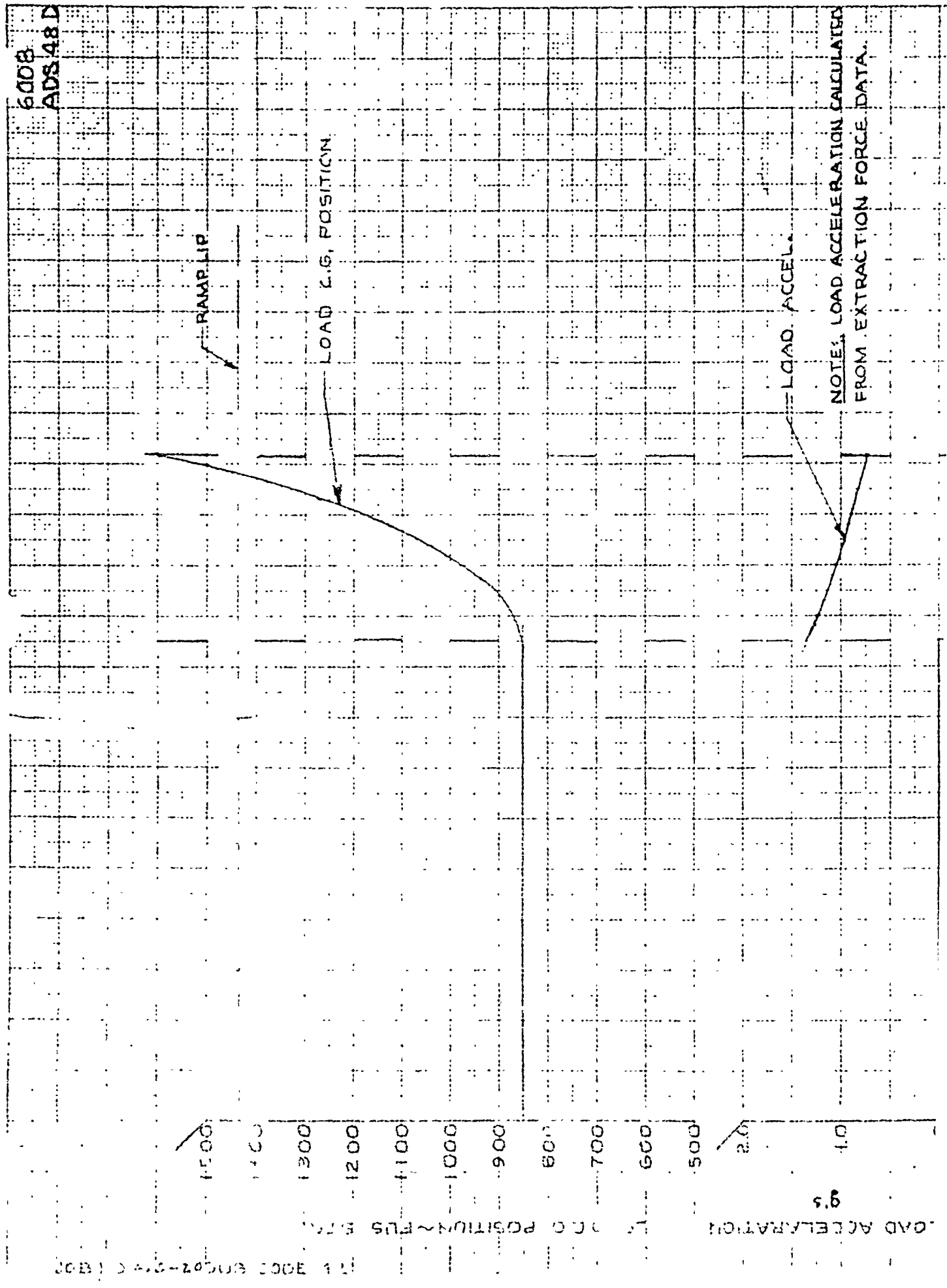
FIGURE D-4C

6008
ADS-40 G
REVISED 1/6/65
JED



6008

6008
ADS48D



11 3001 60002-2740 (B02)

PREPARED BY RSA

DATE 4-7-65

CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-24

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-BQ77

LAC 6008

TEST DATE 4-6-65

FLIGHT 96

DROP NO. 4

SHEET 4 OF 5

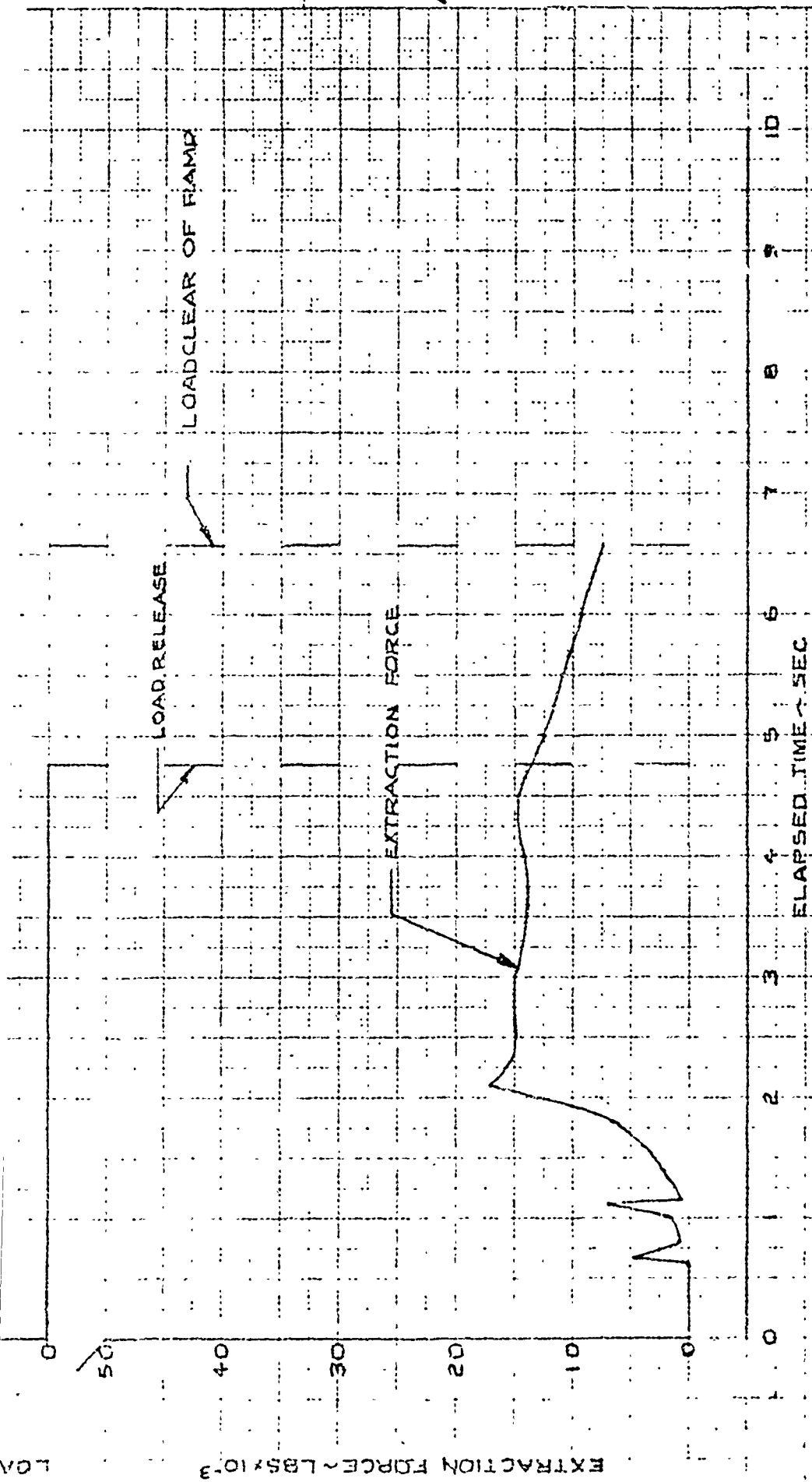
CARGO WT. 10,300 LBS.

NOTE:

SEE FIGURE D-4, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

R.H. RESTRAINT LOCKS UNLOCKED
INTENTIONALLY BY EMERGENCY
RELEASE HANDLE.

FIGURE D-4D



6008

ADS-43D

REV. 10
5-4-65 [Signature]

[Signature]

ADS-48E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM.
Checked			TITLE			D-25
Approved					Model C-141A	Report No ER 5473

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077

LAC 6008

FLIGHT 95

TEST DATE: 4-6-65

G.W. 169,200 LBS. A/S 140.5 KCAS

C.G. 28.0% MAC ALT. ~ 4,980 FT.

NOTE:

DROP WT. ~ 10,300 LBS.

R.H. RAILS INTENTIONALLY RELEASED BY EMERGENCY RELEASE HANDLE

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	23
2	ANGLE OF PITCH	"	1.0
3	C.G. VERT. ACCEL.	g's	1.26
4	C.G. LONG. ACCEL.	"	- 0.057
5	VERT. ACCEL. @ F.S. 277	"	1.25
6	VERT. ACCEL. @ F.S. 1637	"	N.A.
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	13.03
8	VERT. BEND. @ F.S. 1568	"	1.51
9	BENDING ~ M'x @ HBL 44L	"	- 0.289
10	SHEAR ~ S'x @ HBL 44L	LBS. X 10 ⁻³	- 2.790
11	PITCH TRIM ACTUATOR ~ Sx	"	- 1.620
12	R.H. RAMP ACTUATOR LOAD	"	0.830
13	L.H. " " " "	"	0.440
14	R.H. SPIDER ARM LOAD	"	2.620
15	L.H. " " " "	"	2.340
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.460
17	L.H. " " " "	"	6.650
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0.096
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁵	1.470
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.907
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	17.10
25	CARGO LONG. ACCEL.	g's	1.35

FIG. D-4E
ADS-48E

6008
ADS-42A

NOSE UP
NOSE LEFT
RIGHT ROLL

12430-0 (REV. 12-4-21)
AIRCRAFT ATTITUDE ~ DEG
ROLL ~ DEG



NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE ~ DEG
ROLL ~ DEG



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-119**
 AF638077 LAC 6008
 TEST DATE **4-6-65**
 FLIGHT NO. **10** DROP NO. **1**
 SHEET **1** OF **5**
 CARGO WT. **0450 LBS.**

RUN CONDITIONS

1. G.W. ~ 170,600 LBS.
2. C.G. PRIOR TO DROP ~ 27.4% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 61%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. α ~ 1.3 DEG (A/C N.U.)

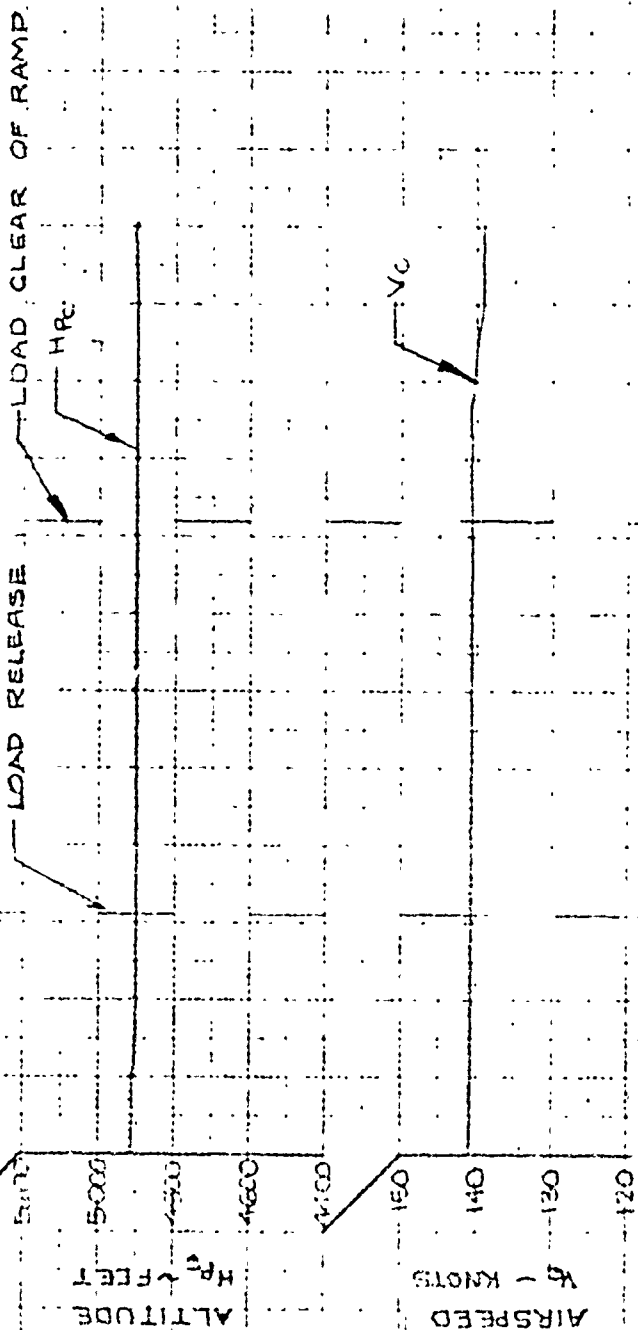
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 144 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ P. 824
 VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 16"
3. RATED CHUTE FORCE/CARGO WT. ~ 18
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 1A



REVISED
 12-14-65
 2034

REVISED
 5-4-65
 7014

6008
 AD-2-94
 1-1204
 JWD

PREPARED BY TEL
DATE 4-6-65
CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY
AERIAL DELIVERY CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-27

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63.8077 LAC 6008
TEST DATE 4-6-65
FLIGHT 96 DROP NO. 5

SHEET 2 OF 5

CARGO WT. 10,450 LBS.

NOTE:
SEE FIGURE 2, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

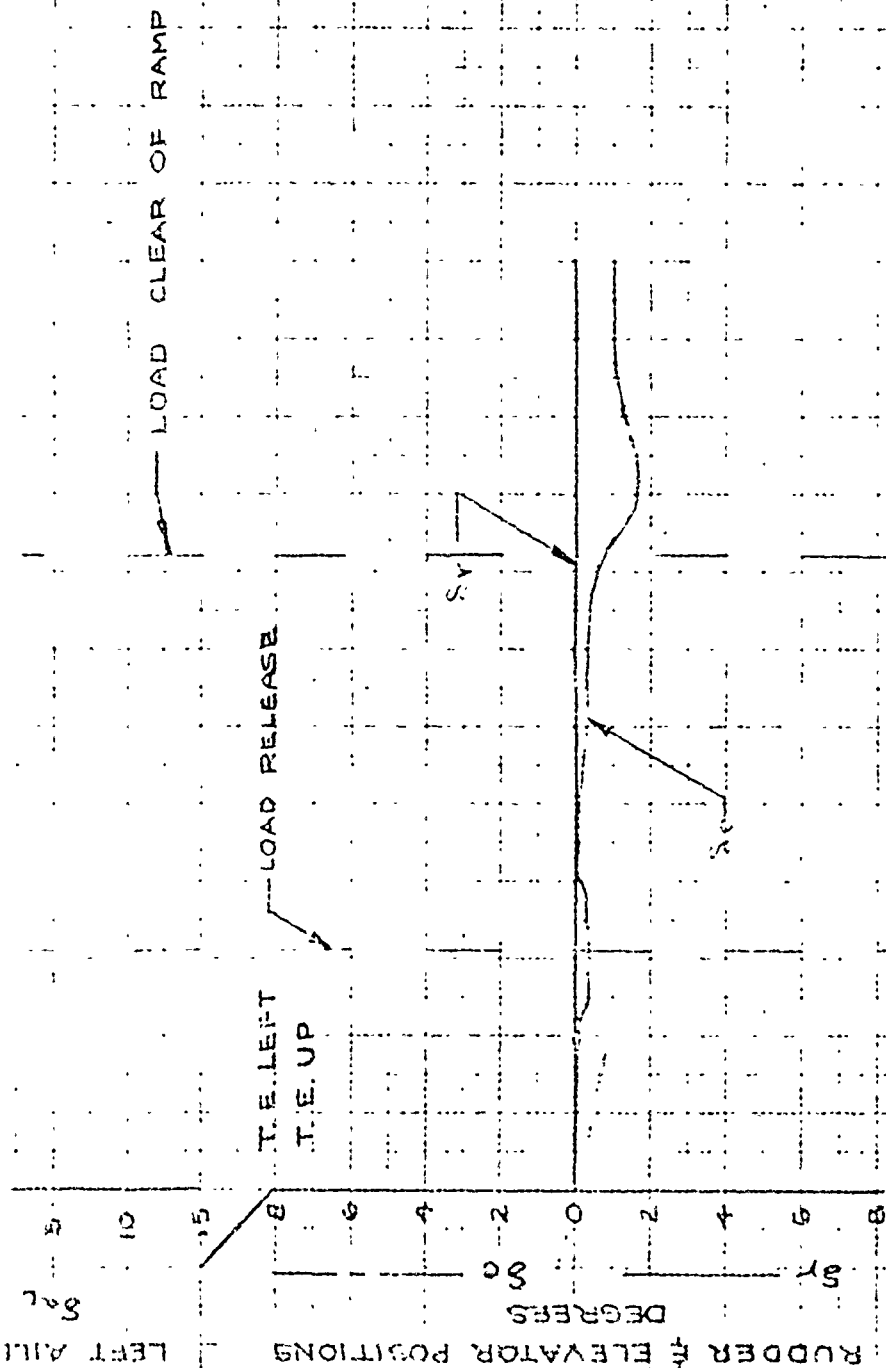


FIGURE 2-52

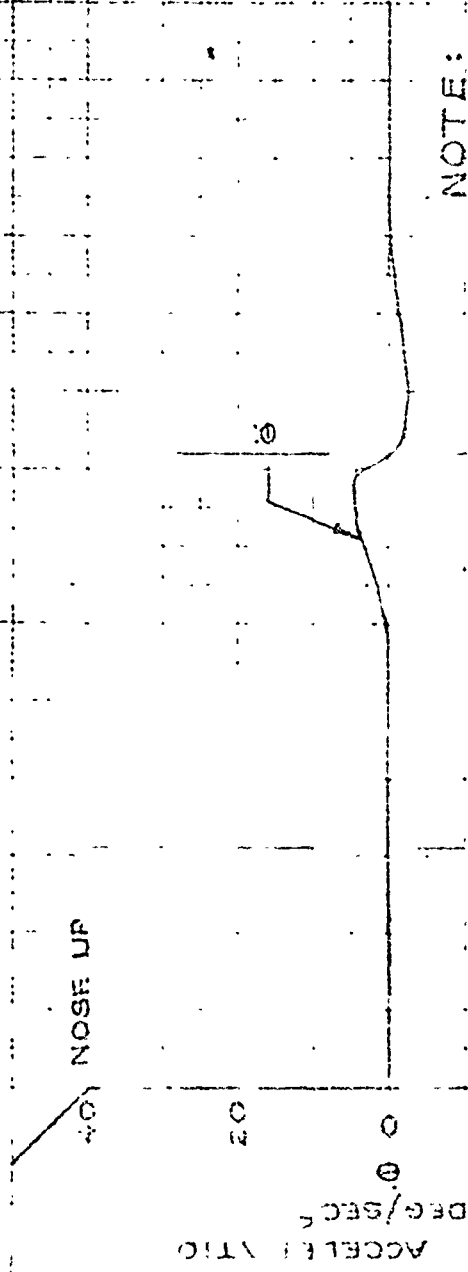
6008

ADS-473

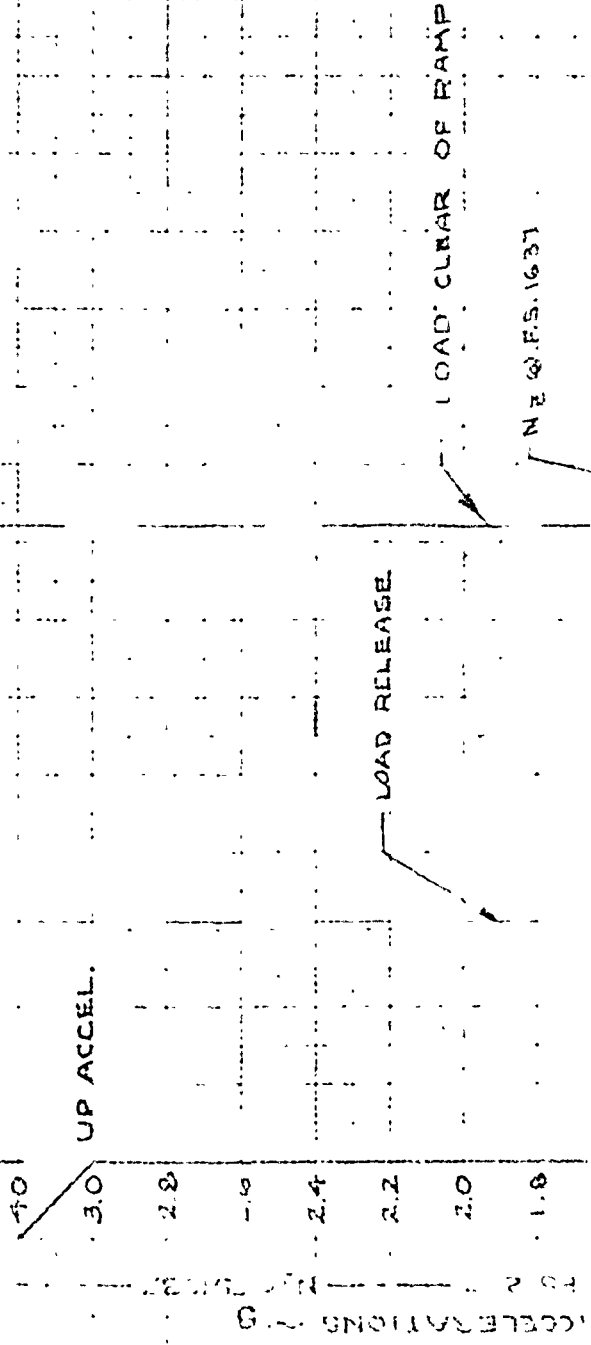
REVISIONS
1-10-65
2-10-65

6008
ADS-42C

12.4 0008.000 4.2.1



NOTE:
G CALCULATED FROM NZ DATA.



PROPERTY OF U.S. D

DATE 4-7-65

ENGINEER JMD

LOCKHEED-BOEING COMPANY

AIR FORCE - AIR FORCE AIR FORCE RATION

REPORT NO. ER 5473

MODEL U-141A

FAST D-28

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 6008

TEST DATE 4-6-65

FLIGHT 96

DROP NO. 5

SHEET 3 OF 5

CARGO WT. 10,450

NOTE:

SEE FIGURE 5, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

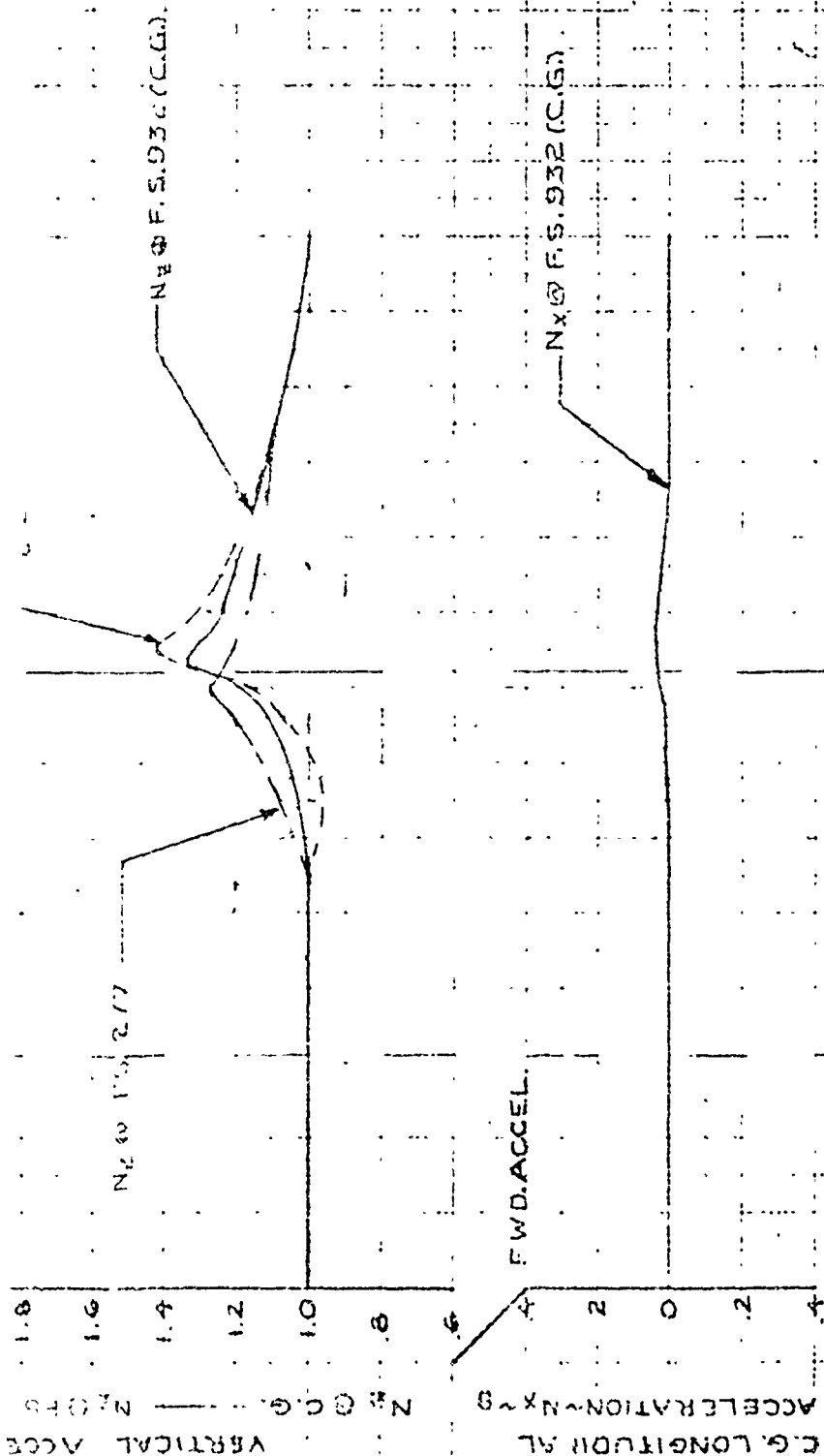
ELAPSED TIME - SEC.

FIGURE D-5C

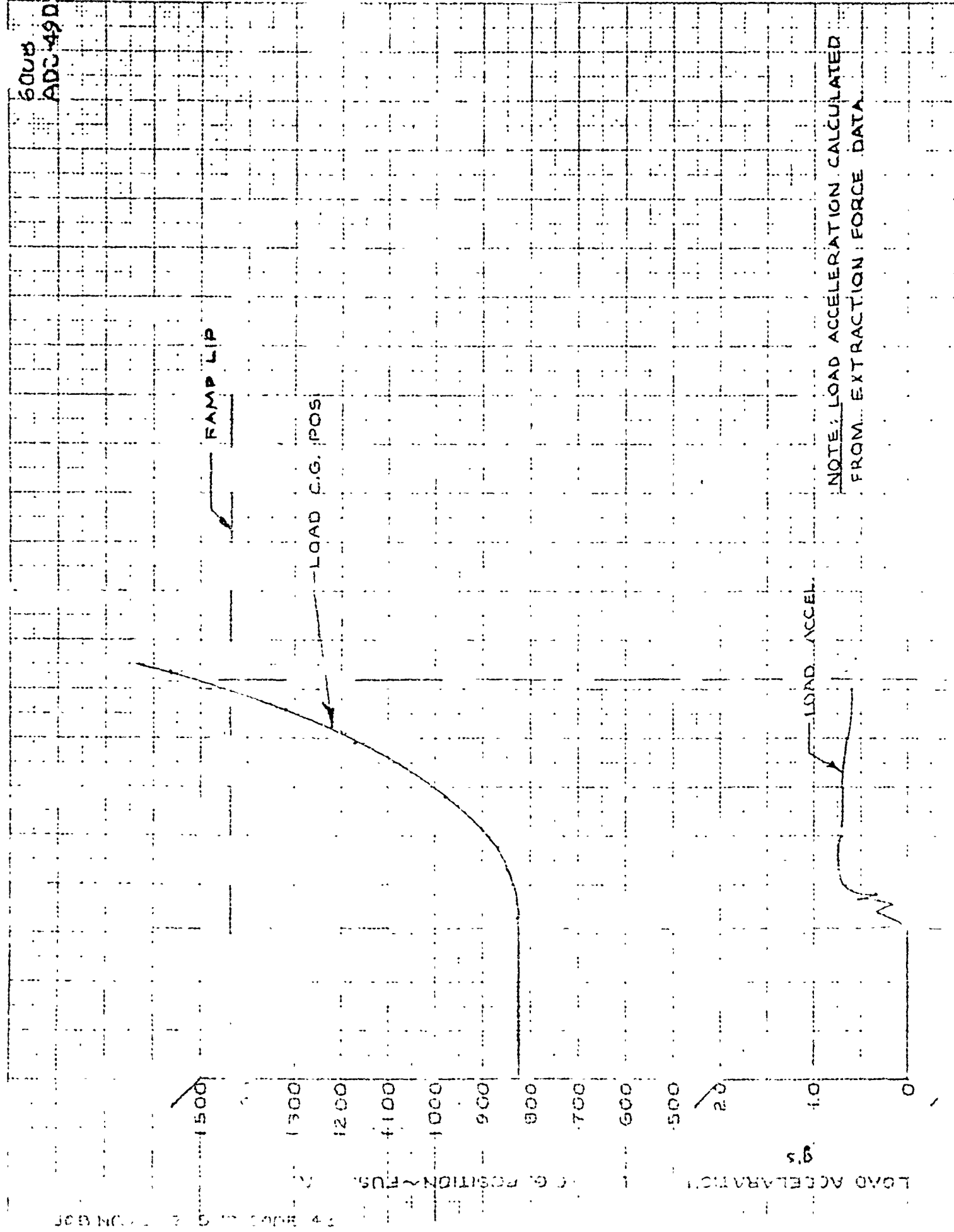
6008

ADS-9C

REVISED 5-4-65 (2a) JMD



600B
ADC 49D



PLANNED BY ECW
DAY 4-8-65
CHECKED BY *[Signature]*

DEFINED WORKING DAY
FALL 1965

REPORT NO. 5473
MODEL C-141A
PAGE D-29

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-BQ77

LAC 6008

TEST DATE 4-6-65

FLIGHT 96

DROP NO. 5

SHEET 4 OF 5

CARGO WT. 10450 LBS.

NOTE:

SEE FIGURE 1, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

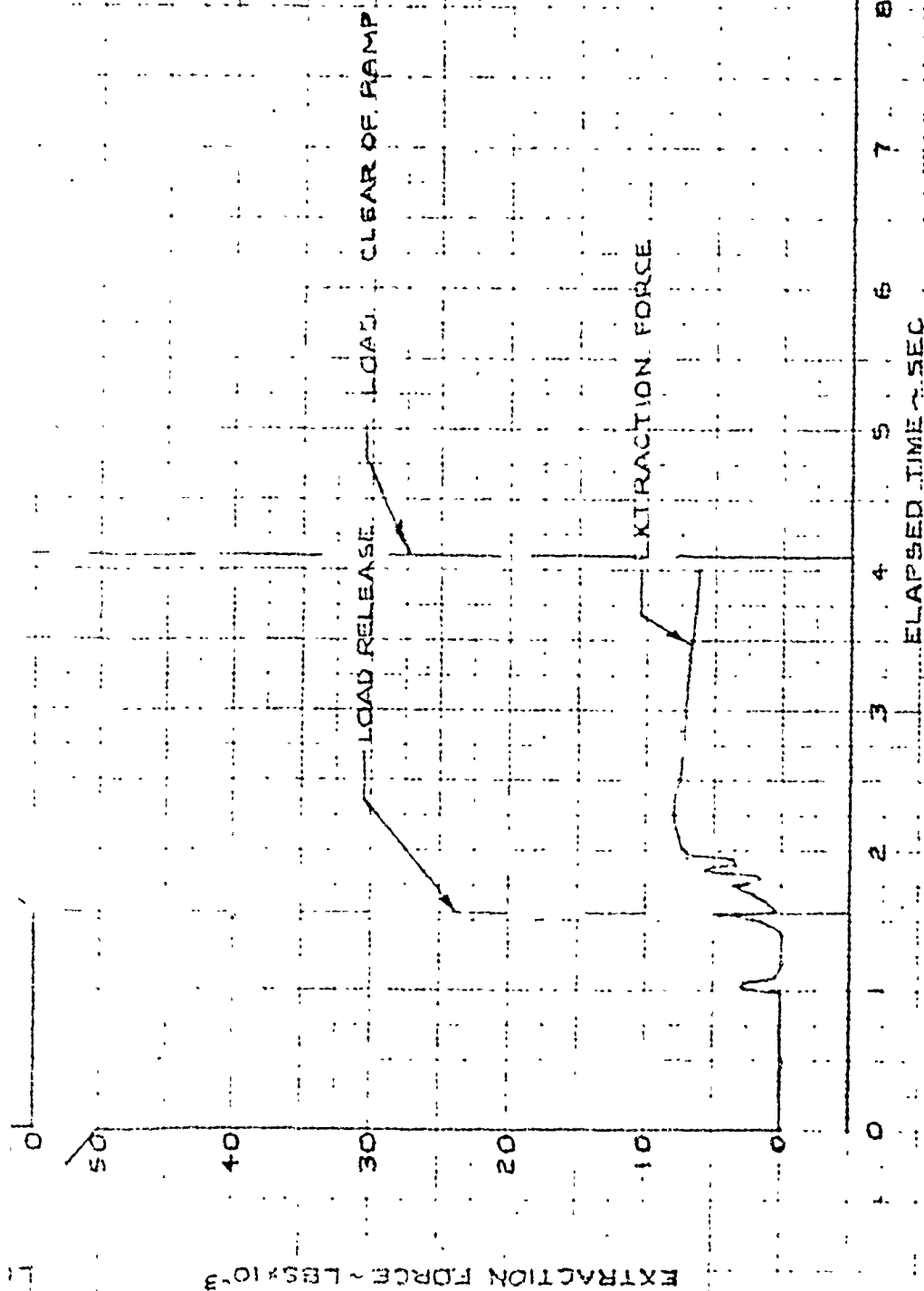


FIGURE D-5D

6008

ADS-49D

5-4-65 2M

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Checked			TITLE	Model	C-141A	
Approved				Report No.	5473	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077

LAC 6008

FLIGHT 96

TEST DATE 4-6-65

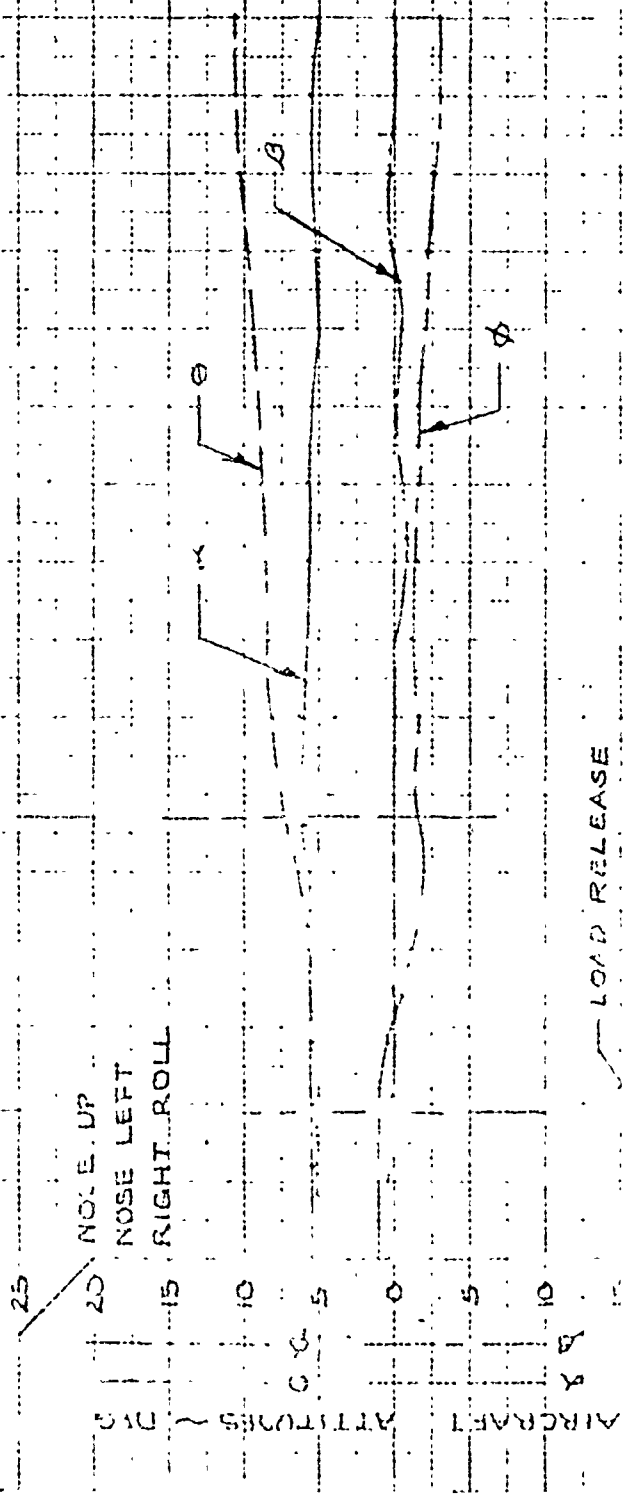
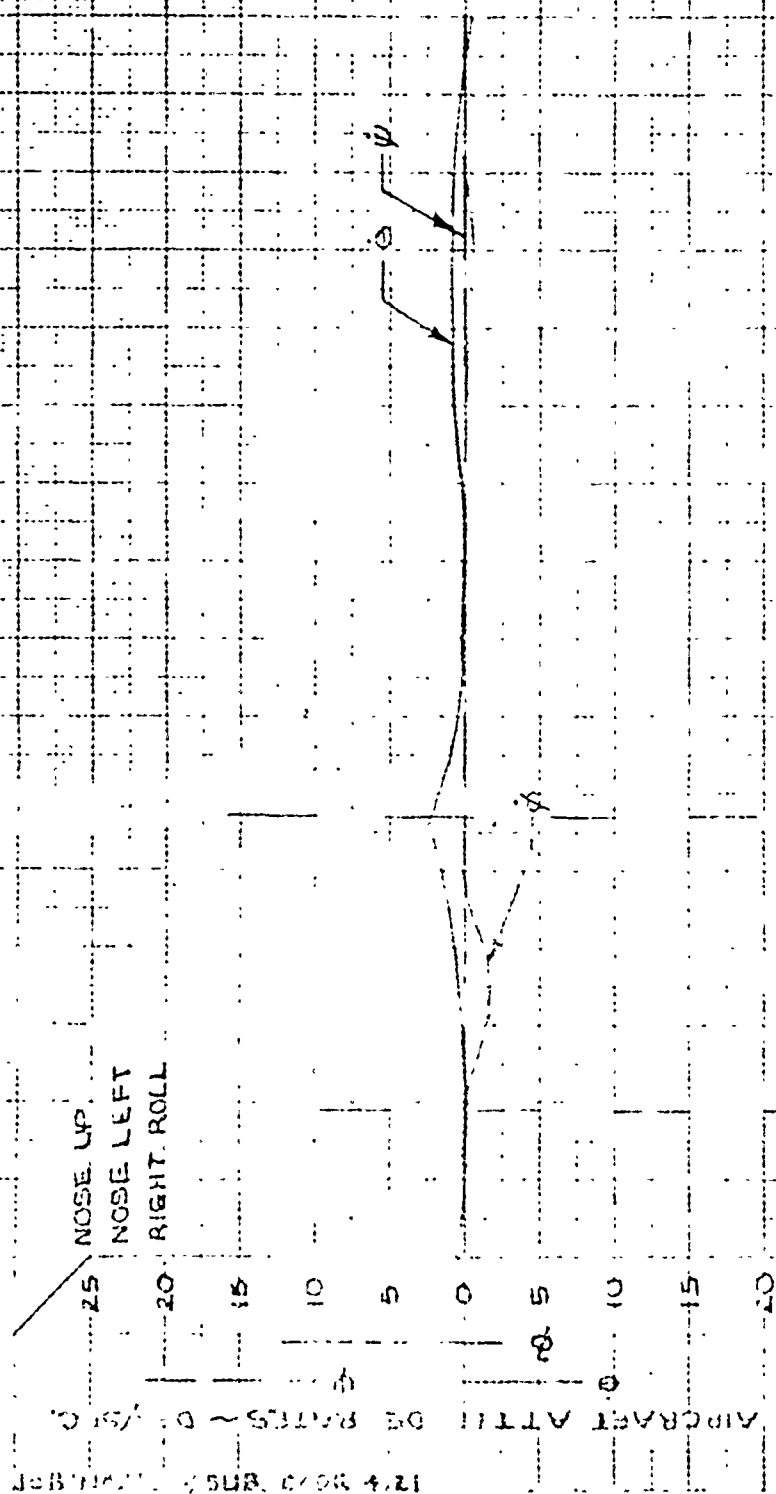
G.W. 170,600 LBS. A/S 141 KCAS

C.G. 27.4% MAC. ALT. ~ 4,920 FT.

DROP WT. ~ 10,450 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.3
2	ANGLE OF PITCH	"	4.5
3	C.G. VERT. ACCEL.	g's	1.33
4	C.G. LONG. ACCEL.	"	- 0.068
5	VERT. ACCEL. @ F.S. 277	"	1.27
6	VERT. ACCEL. @ F.S. 1637	"	1.42
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	13.03
8	VERT. BEND. @ F.S. 1568	"	1.57
9	BENDING ~ M _x @ HBL 44L	"	- 0.28
10	SHEAR ~ S _z @ HBL 44L	LBS. X 10 ⁻³	- 2.680
11	PITCH TRIM ACTUATOR ~ S _z	"	- 1.350
12	R.H. RAMP ACTUATOR LOAD	"	0.950
13	L.H. " " " "	"	0.960
14	R.H. SPIDER ARM LOAD	"	3.560
15	L.H. " " " "	"	3.420
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.500
17	L.H. " " " "	"	7.700
18	BENDING ~ M _x @ VSS	IN-LBS. X 10 ⁻⁶	0.096
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	2.260
20	L.H. " " " "	"	N.A.
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.220
22	L.H. " " " "	"	N.A.
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	7.74
25	CARGO LONG. ACCEL.	g's	0.74

6008
ADS 52A



LOAD RELEASE

PREPARED BY **FLW**
 DATE **4-13-65**
 RECEIVED BY **FLW**

LOCKHEED-GEORGIA COMPANY
 AERIAL DELIVERY AERIAL COORDINATION

REPORT NO. **EP 5473**
 MODEL **C-141A**
 PAGE **D-31**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF838077

LAC 6008

TEST DATE **4-12-65**

FLIGHT **99**

DROP NO. **2**

SHEET **1** OF **6**

CARGO WT. **13200 LBS.**

RUN CONDITIONS

1. G.W. 169,300 LBS.
2. C.G. PRIOR TO DROP 25.8% MAC
3. C.G. AFTER DROP 29.5% MAC
4. FLAPS ~ UP
5. GEAR ~ UP
6. AVG. EPR ~ .118 (4 ENGINES)
7. α ~ 1.7 DEG. (AC N.O.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 14.4 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ P.3.312
 VERT. ~ WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. LBS.
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE 5-3A

LOAD RELEASE

LOAD CLEAR OF RAMP

ALTITUDE
 HPC - FEET

AIR SPEED
 V - KNOTS

ELAPSED TIME ~ SEC.

REVISED
 12-14-65
 MGH

REVISED
 12-14-65
 J. H. H.

600MB

ADS-52B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40

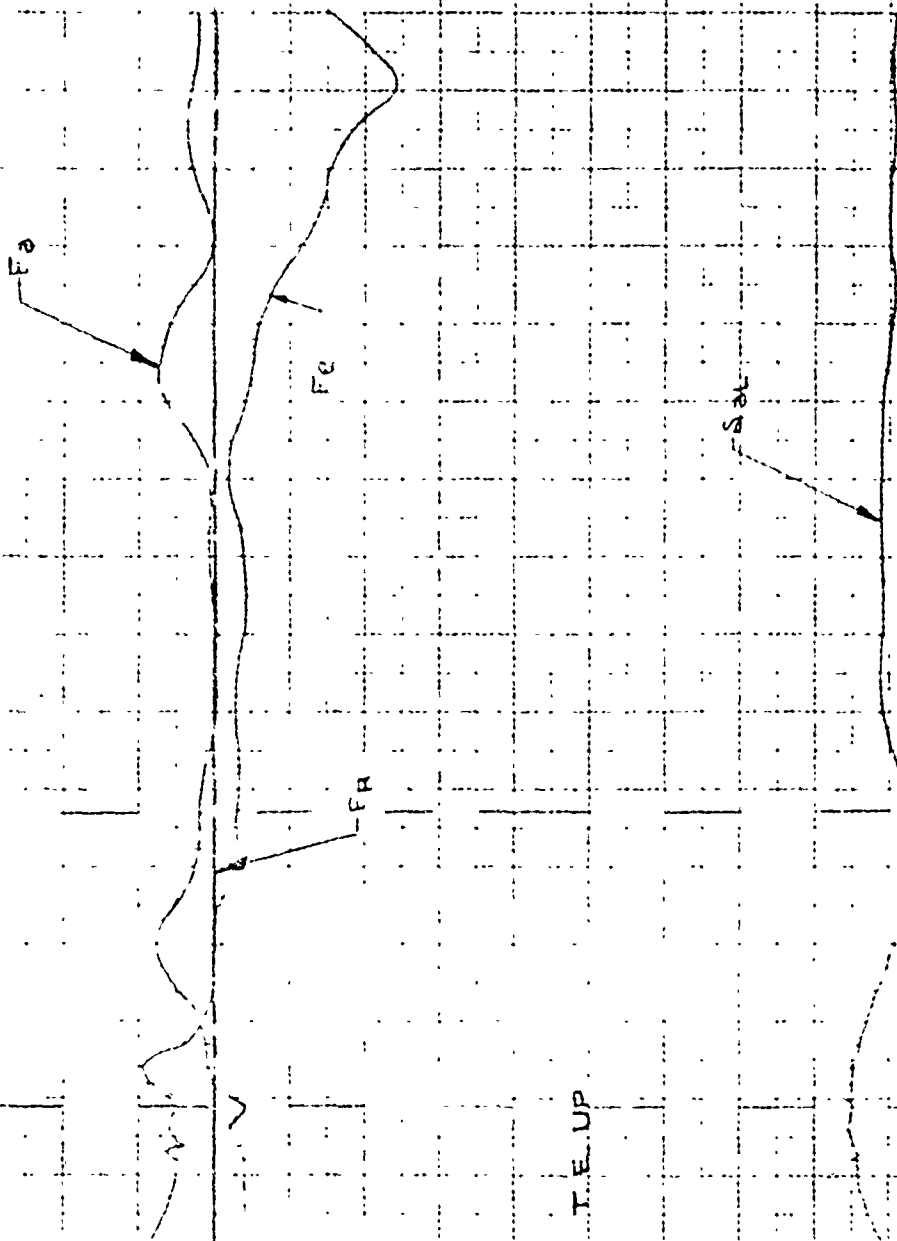
CONTROL FORCES ~ LBS.

JOB NO. 25-24 SUB. CODE 4 11

T.E. UP

AILERON POSITION ~ DEG.

LOAD RELEASE



TFD
4-13-65
JMD

REPORT NO. ER 5473
MODEL C-141A
PAGE D-32

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 4-12-65
FLIGHT 99 DROP NO. 2
SHEET 2 OF 6
CARGO WT. 13,200 LBS.

NOTE:
SEE FIGURE SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

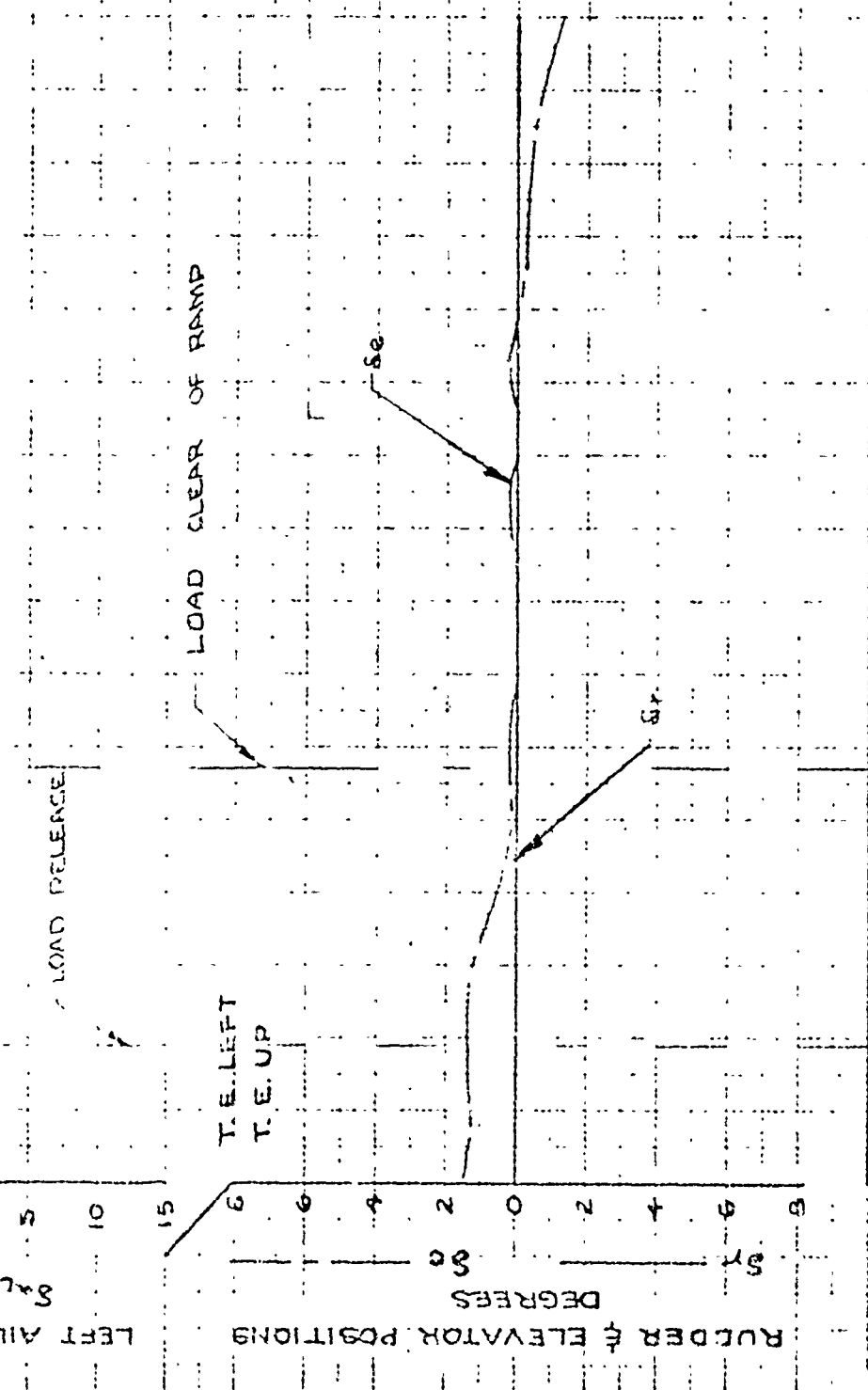


FIGURE 2-2

6008
ADS-225
REVISED 4/2/65
JMD

6008
ADB-52C

1.2.4 BDDJ005+2001 CODE 4.2.1

PITCHING ACCELERATION

DEG/SEC

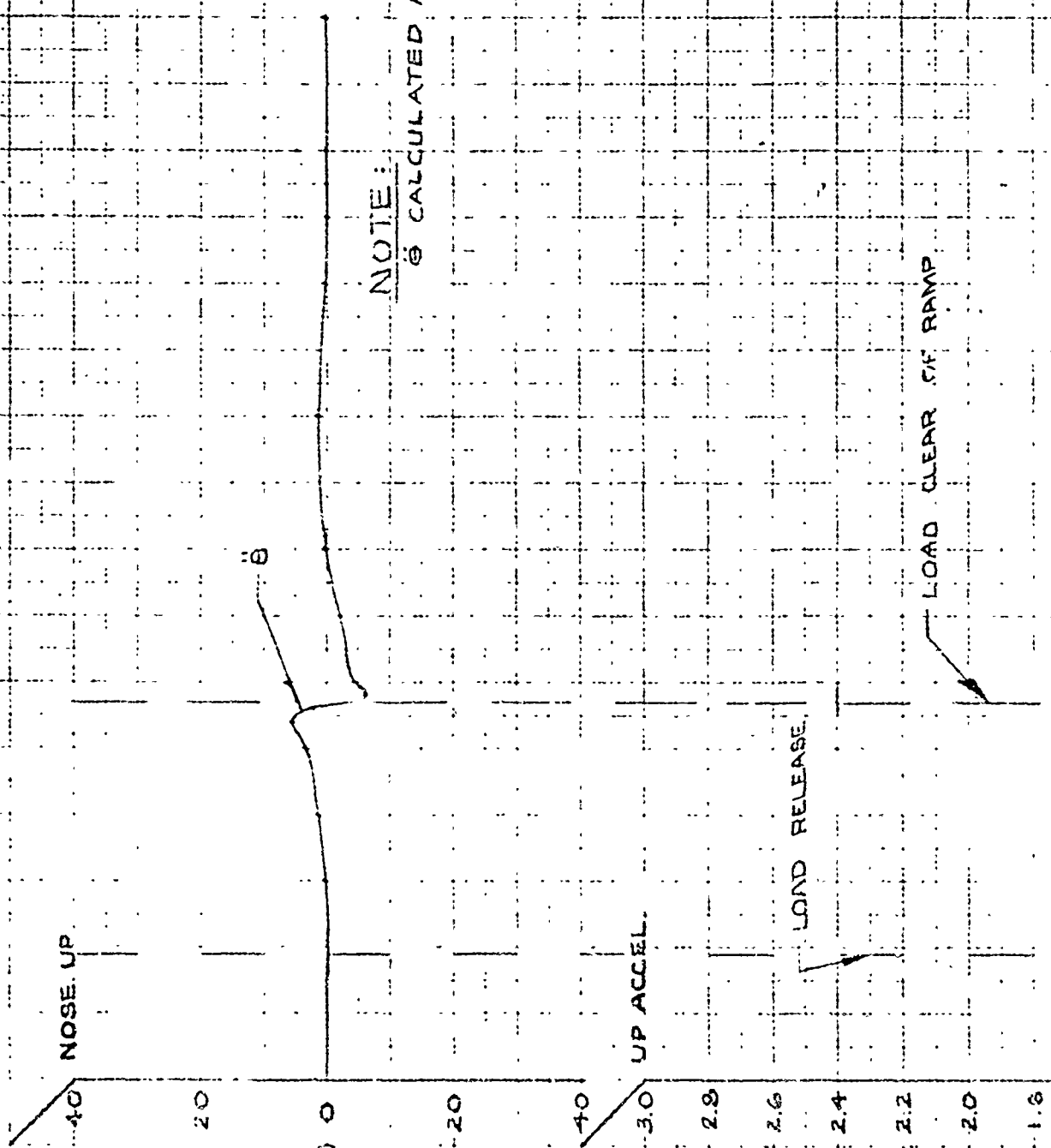
NOSE UP

UP ACCEL

LOAD RELEASE

LOAD CLEAR OF RAMP

NOTE:
 θ CALCULATED FROM N_z DATA



PREPARED BY TED

DATE 4-12-65

CHECKED BY *Jim*

WHEELS OF A C AND A
SPEED OF GROUND AND AIR POSITION

REPORT NO ER 5473

MODEL C-141A

PAGE D-33

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 600B

TEST DATE 4-12-65

FLIGHT 99

DROP NO 6

SHEET 3 OF 6

CARGO WT. 13 200 LBS

NOTE:
SEE FIGURE 4 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

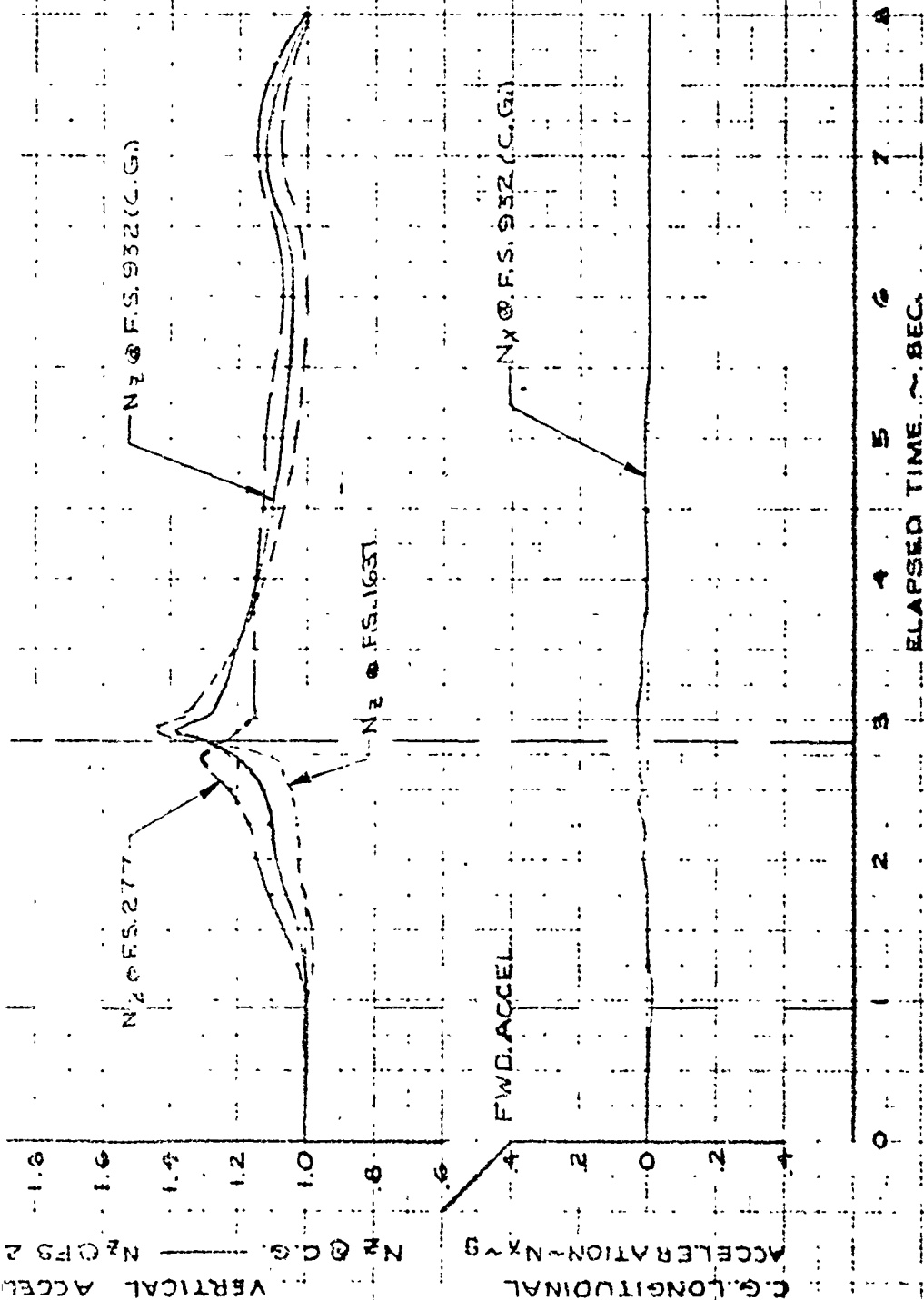
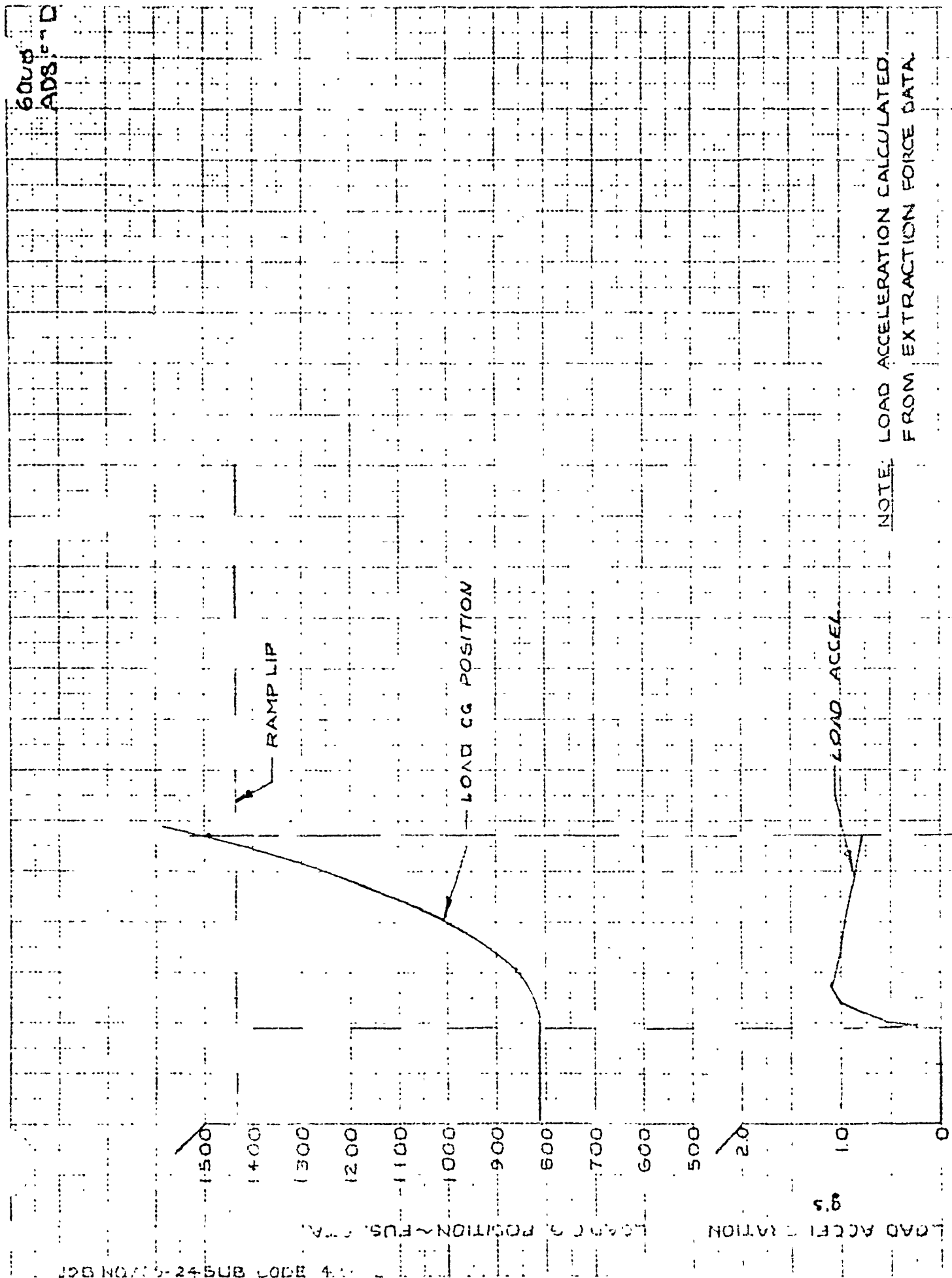


FIGURE D-6C

6003
ADS-22

REVISED 5-4-65 THW
REVISED 7/20/65 *Jim*

6008
AD8.5-D



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

PREPARED BY RSA
ON 4-12-65

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. LR 5473
MODEL C-141A
PAGE D-34

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-12-65
FLIGHT 99 DROP NO. 6

SHEET 4 OF 6

CARGO WT. 13,200 LBS.

NOTE:
SEE FIGURE D-5, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

LOAD CLEAR OF RAMP

LOAD RELEASE

EXTRACTION FORCE

ELAPSED TIME - SEC

FIGURE D-6D

EXTRACTION FORCE - LBS $\times 10^{-3}$

6008
ADS 52 D
REVISION 12/15
JAP

PREPARED BY TED
DATE 9-17-65
CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-35

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF63-BOTT

LAC 6008

FLIGHT ~ 99

DATE: 4-12-65

DROP NO. ~ 6

DROP WT. ~ 13,200 LB

SHEET 5 OF 6

NOTE:

SEE FIGURE 27 SHEET 1 OF 5 FOR
RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION

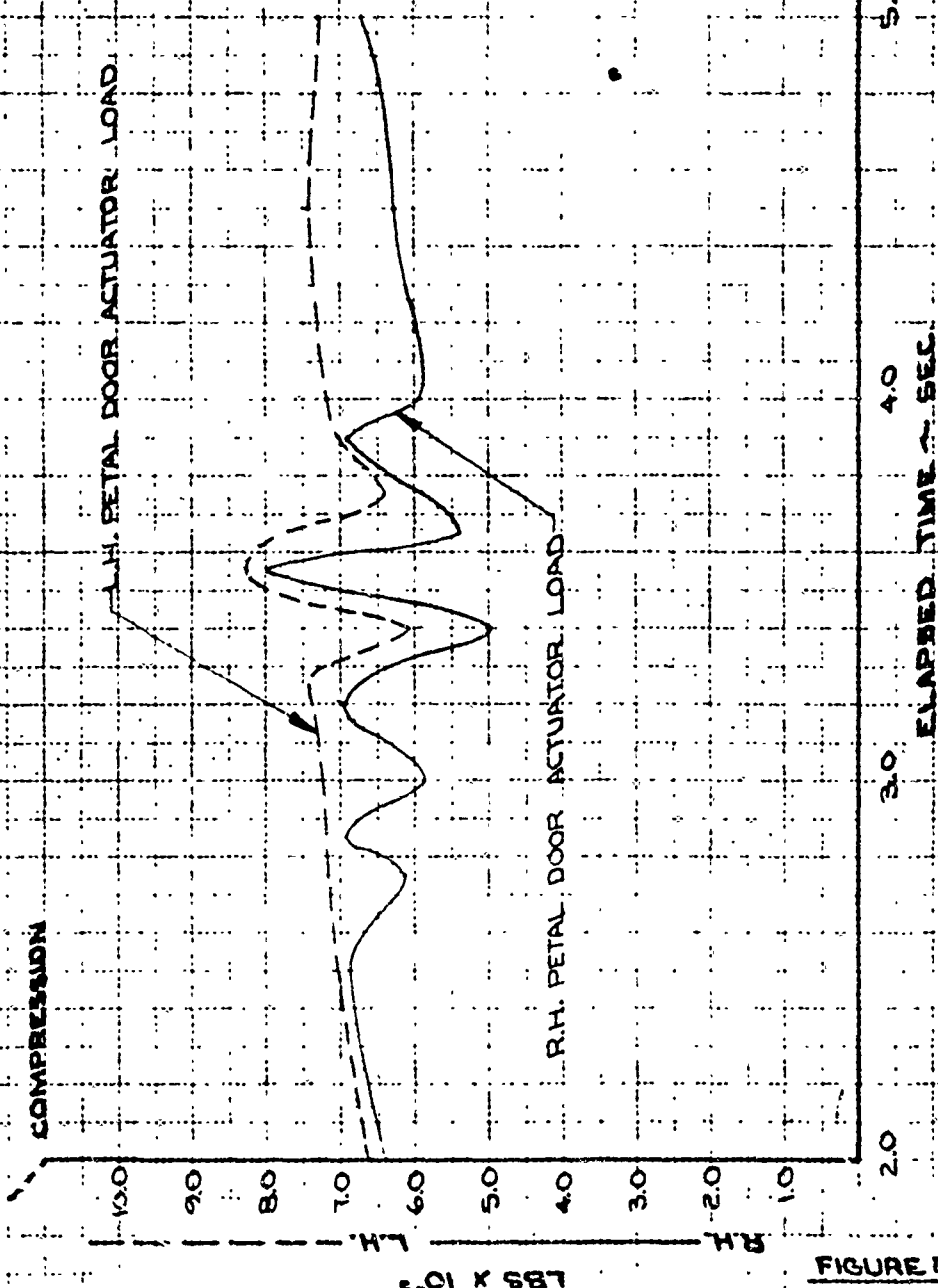


FIGURE D-CE

PETAL DOOR ACTUATOR LOADS ~

100 X 10⁻³

L.H.

R.H.

6008
ADS-52E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

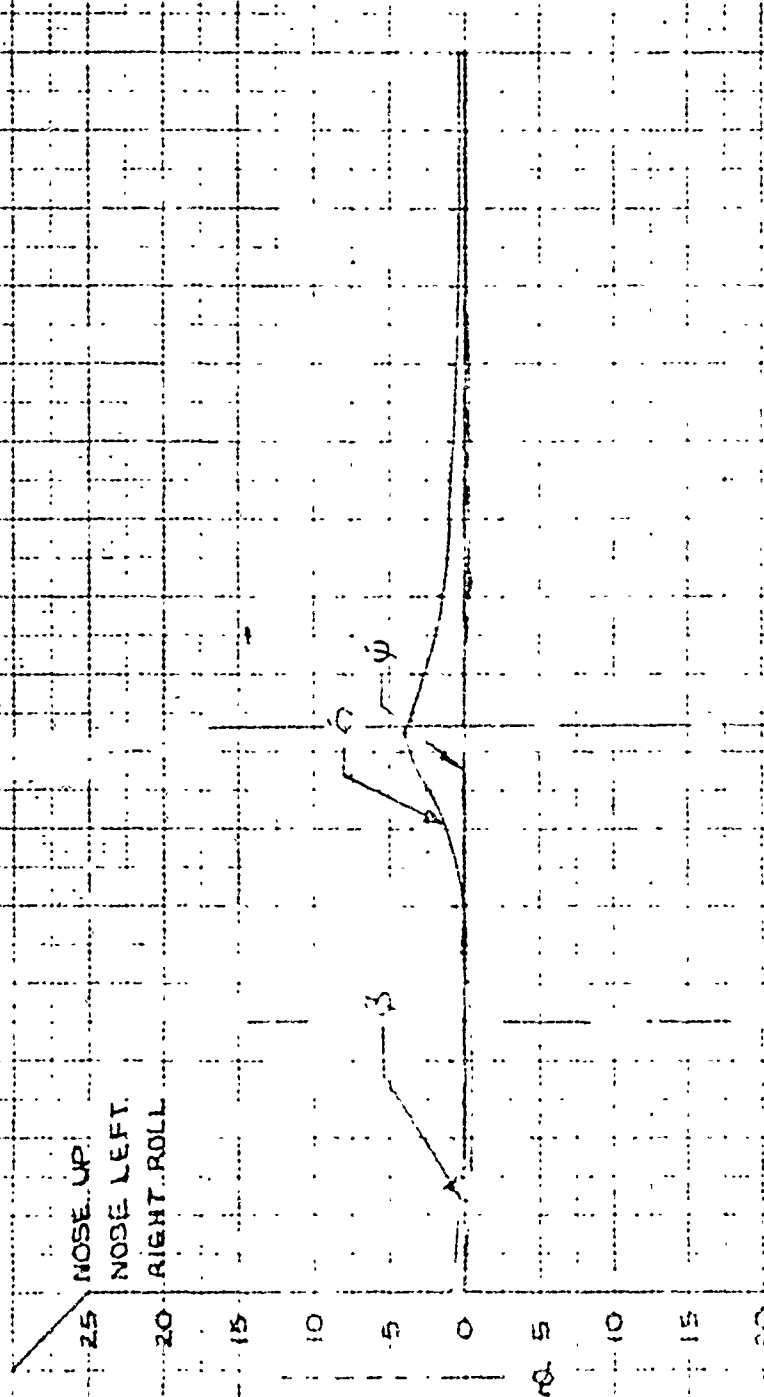
PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A
 AF 63-8077 LAC 6009
 FLIGHT 99 TEST DATE: 4-12-65
 G.W. 169,300 LBS. A/S 155 KCAS
 C.G. 25.8% MAC ALT ~ 4,940 FT.
 DROP WT. ~ 13,200 LBS.

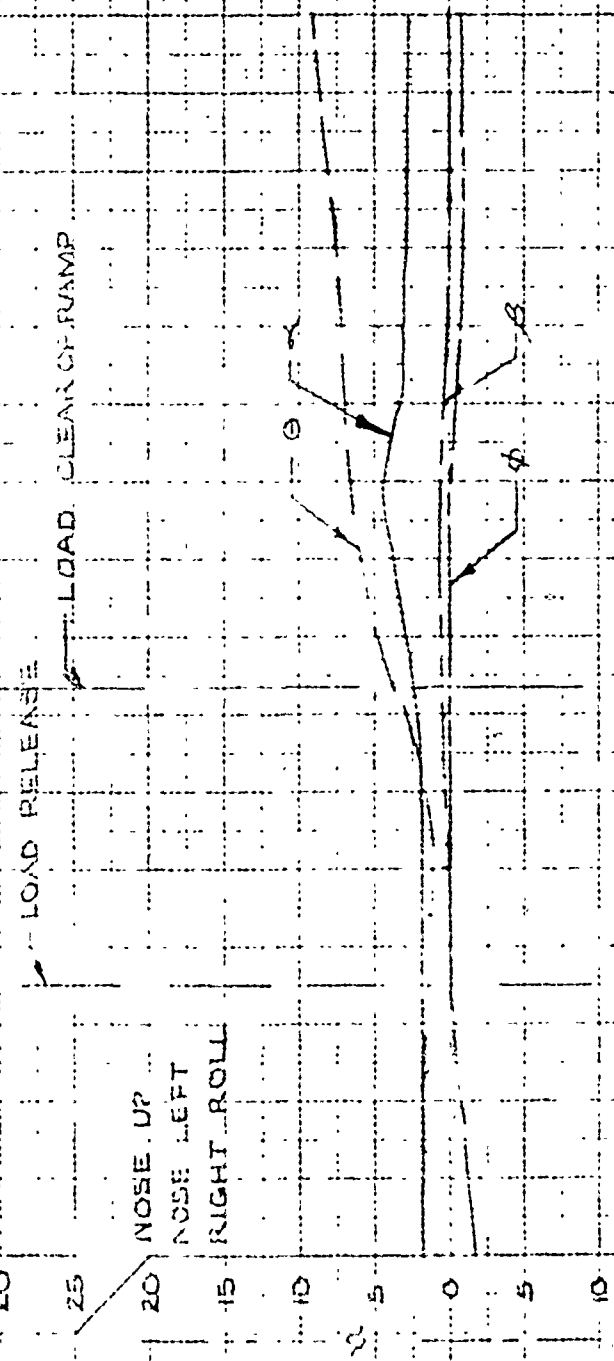
	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	6.1
2	ANGLE OF PITCH	"	8.0
3	C.G. VERT. ACCEL.	g's	1.37
4	C.G. LONG. ACCEL.	"	- 0.045
5	VERT. ACCEL. @ F.S. 277	"	1.30
6	VERT. ACCEL. @ F.S. 1637	"	1.45
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	2.994
8	VERT. BEND. @ F.S. 1568	"	1.248
9	BENDING ~ M'x @ HBL 44L	"	- 0.091
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	- 1.100
11	PITCH TRIM ACTUATOR ~ S _z	"	- 1.840
12	R.H. RAMP ACTUATOR LOAD	"	0.760
13	L.H. " " " "	"	0.300
14	R.H. SPIDER ARM LOAD	"	4.410
15	L.H. " " " "	"	4.500
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8.000
17	L.H. " " " "	"	8.240
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	3.400
20	L.H. " " " "	"	2.400
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.550
22	L.H. " " " "	"	- 1.020
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	14.33
25	CARGO. LONG. ACCEL.	g's	1.08

FIG. D-6E
 ADS-52F

66-
ADSD3A



174 3000 BMS-23 SUB. CODE 4.21
AIRCRAFT ATTITUDE RATES - DEG/SEC.



CRAFT ATTITUDES - DEG.

PREPARED BY FCW
 DATE 4-14-65
 CHECKED BY JWD

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE 1 OF 37

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF638077 LAC 6008
 TEST DATE 4-13-65
 FLIGHT 100 DROP NO. 7
 SHEET 1 OF 6

CARGO WT 18300 LBS

FLY CONDITIONS

1. G.W. ~ 178,200 LBS.
2. C.G. PRIOR TO DROP ~ 26.2% MAC
3. C.G. AFTER DROP ~ 30.2% MAC
4. FLAPS ~ 62%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. α ~ 1.7° (A/C N/D)

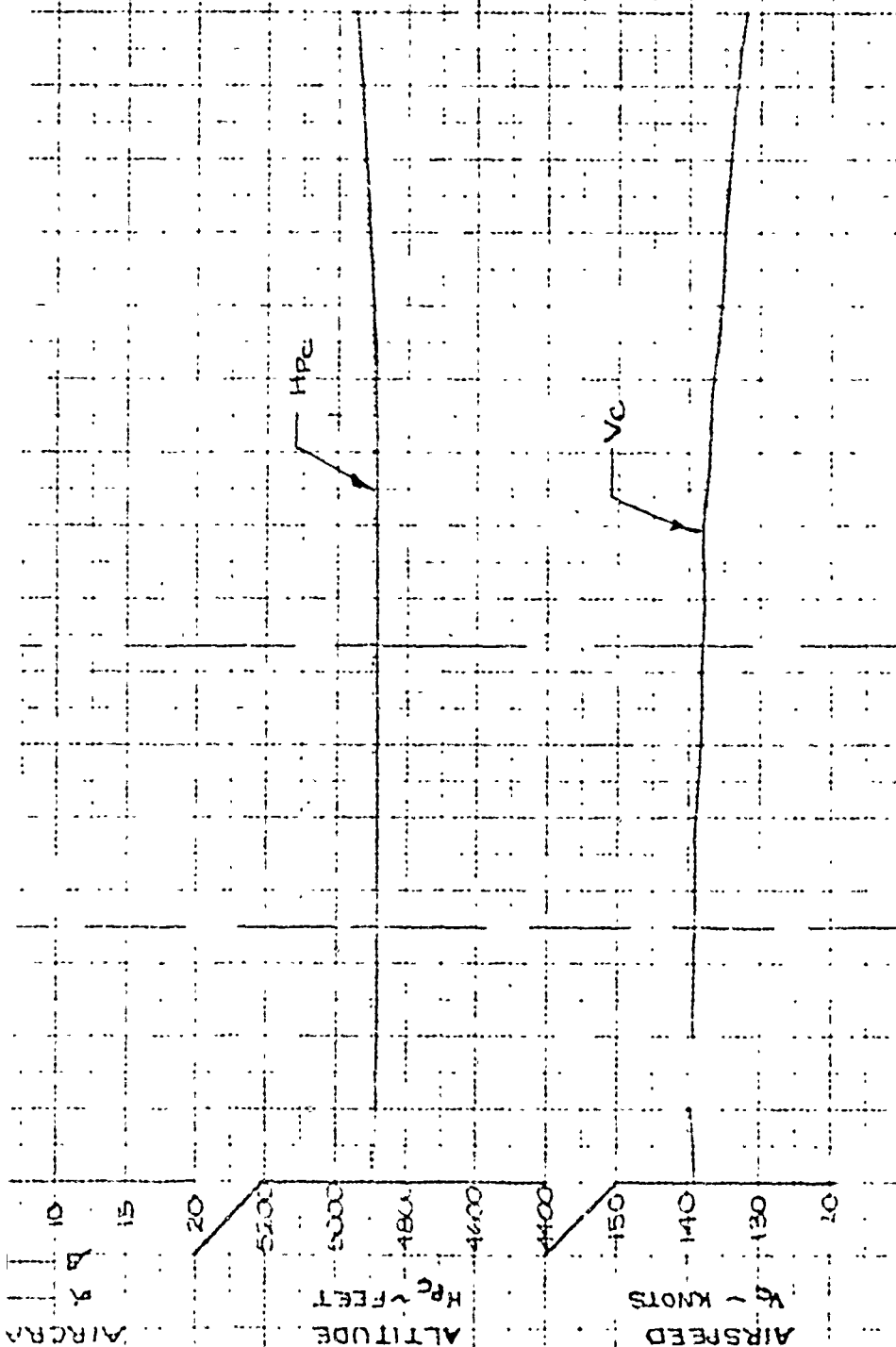
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3 835
 VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE 32' FEET TO 24'
3. RATED CHUTE FORCE/CARGO WT. 62
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 2-7A



REVISED
 12-19-65
 ALEN

REVISED

15-4-65

FW

FW

REVISED 4/1/65

FW

6/1/65
 ADS:EA

6008
ADS-53B

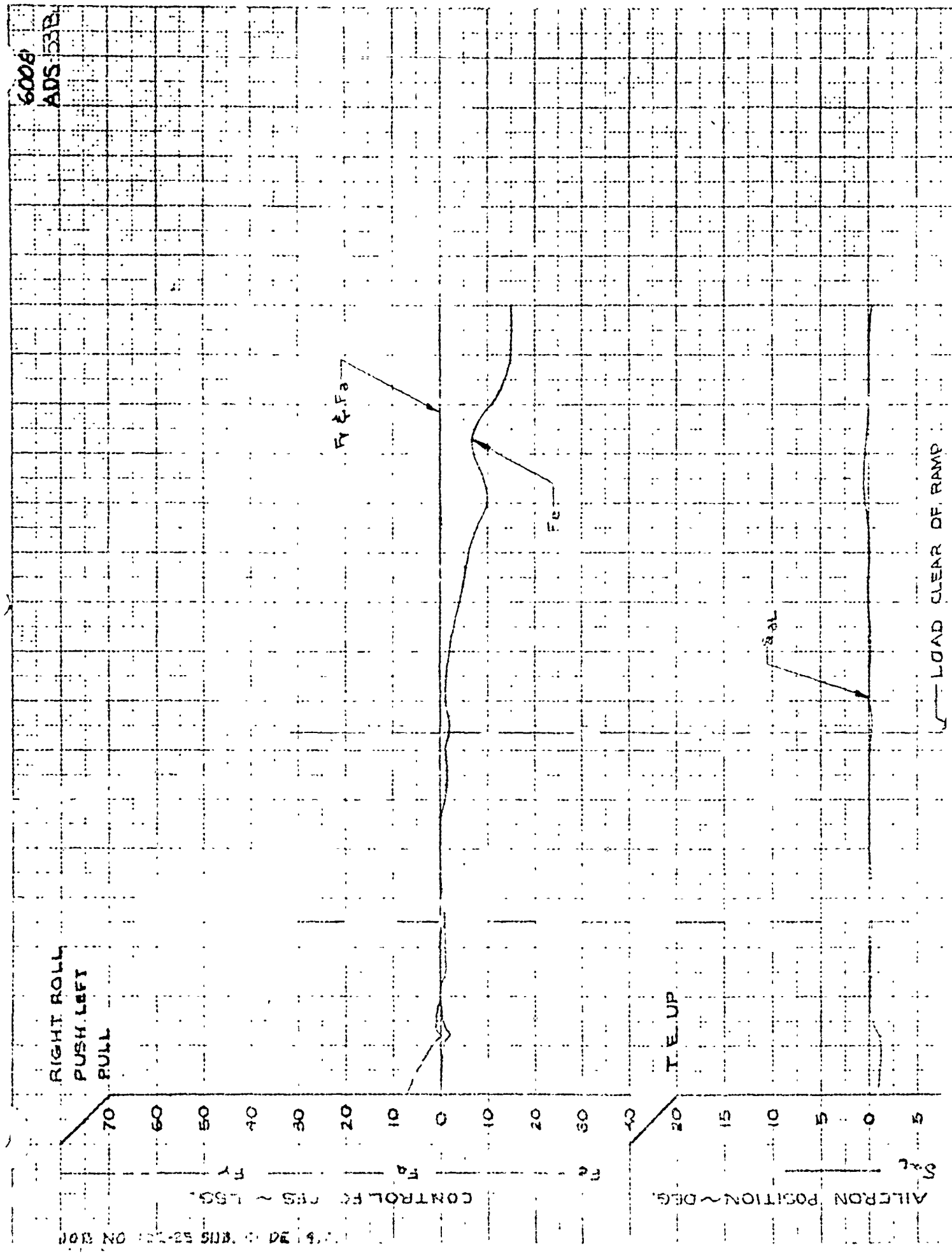
RIGHT ROLL
PUSH LEFT
PULL

JOB NO 101-25 SUB. 0 DE 4
CONTROL FC CBS ~ LSS
F_y
F_a

T.E. UP

AILERON POSITION ~ DEG.
S_{AL}

LOAD CLEAR OF RAMP



PREPARED BY: TED

DATE: 4-14-65

CHECKED BY: JUP

LOCKHEED GEORGIA COMPANY
AERIAL DELIVERY SYSTEMS DIVISION

REPORT NO: ER 5473

MODEL: C-141A

D-38

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL: C-141A

AF 63 8077

LAC 6008

TEST DATE: 4-13-65

FLIGHT NO:

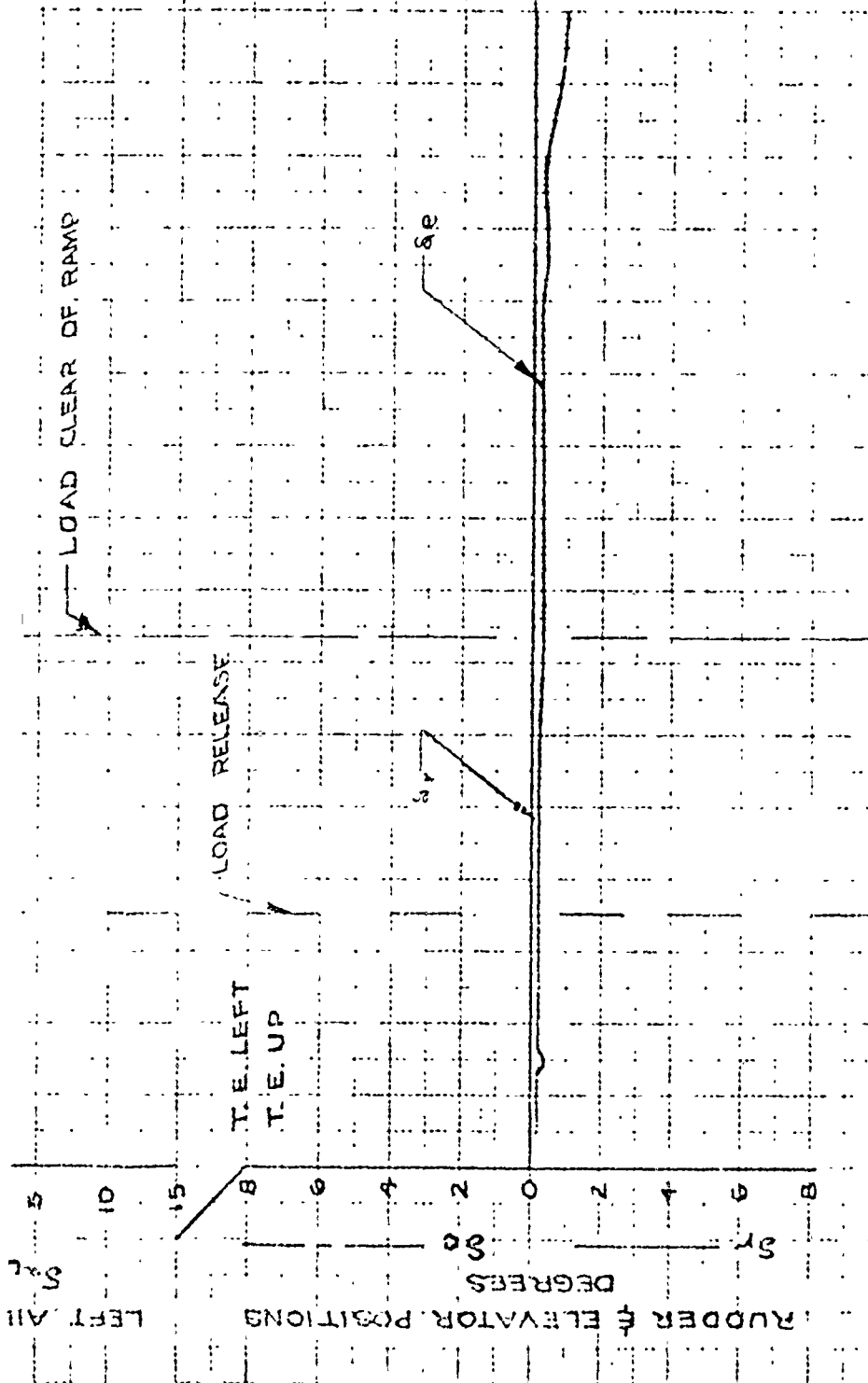
DROP NO: 1

SHEET 2 OF 6

CARGO WT: 2221.95

NOTE:

SEE FIGURE 1 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.



ELAPSED TIME - SEC.

FIGURE 2-73

6003

ALS-338

REVISED 6-2-65 DID 5-4-65 JUP

6008
ADB-53C

NOSE UP.

$\dot{\theta}$

NOTE:

$\dot{\theta}$ CALCULATED FROM N_2 DATA.

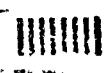
UP ACCEL.

LOAD RELEASE

LOAD CLEAR OF BRMR

N_2 @ F.S. 1637 DATA NOT AVAILABLE

N_2 @ F.S. 932 (C.G.)



17.4 2000 BT 15.00 CONT

PITCHING ACCELERATION

DEG/SEC²

ELERATIONS ~ g

N_2 @ F.S. 1637

2.7

DATE 4-14-65
 TIME 10:00
 T.E.D.

TEST REPORT NO. 5473
 MODEL C-141A
 D-39

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AFG3-B077 LAC 6008
 TEST DATE 4-13-65
 FLIGHT 100 DROP NO. 1
 SHEET 3 OF 4
 CARGO WT. 18,300 LBS

NOTE:
 SEE FIGURE 2 SHEET 1 OF 4
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

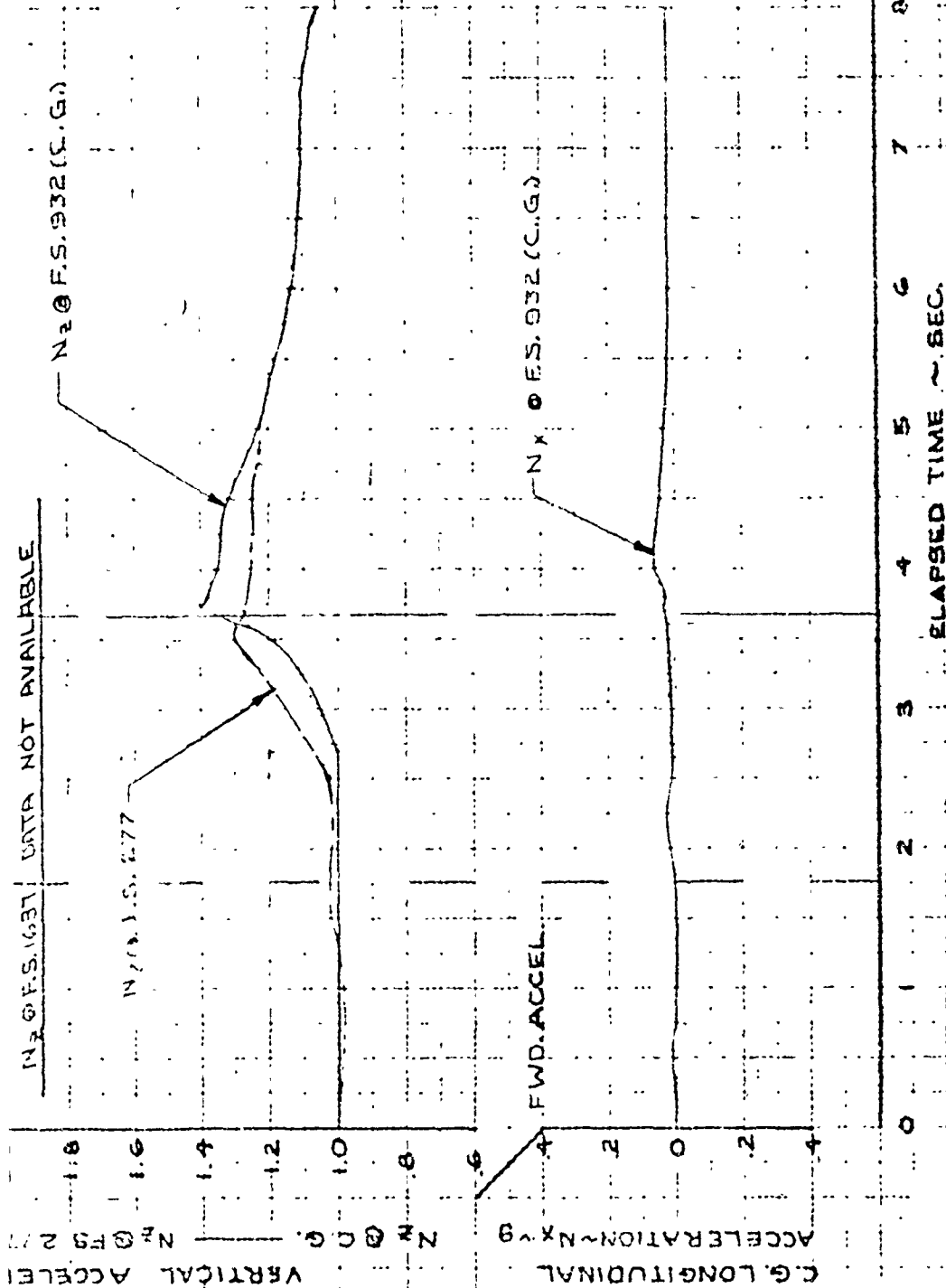


FIGURE 2-7C

6008
 ADS-1

REvised 11/10/65
 5-2-65

6008
ADS530

JOB NO 4025 SUB CODE 42

RAMP LIP

LOAD CG POSITION

LOAD ACCEL

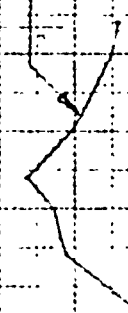
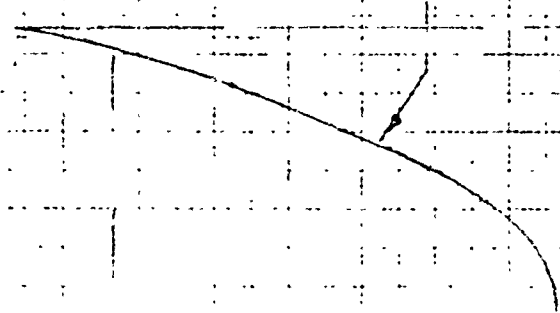
NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

1500
1400
1300
1200
1100
1000
900
800
700
600
500

2.0
1.0

LOAD CG POSITION ~ FUS. STA.

AD ACCELERATION



PREPARED BY RSA
DATE 4-11-65
CHECKED BY JAD

LOCKHEED-BOEING COMPANY
AERONAUTICAL ENGINEERING DIVISION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-40

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-13-65
FLIGHT 100 DROP NO. 7

SHEET 4 OF 6

CARGO WT. 18,300 LBS.

NOTE :
SEE FIGURE 2, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

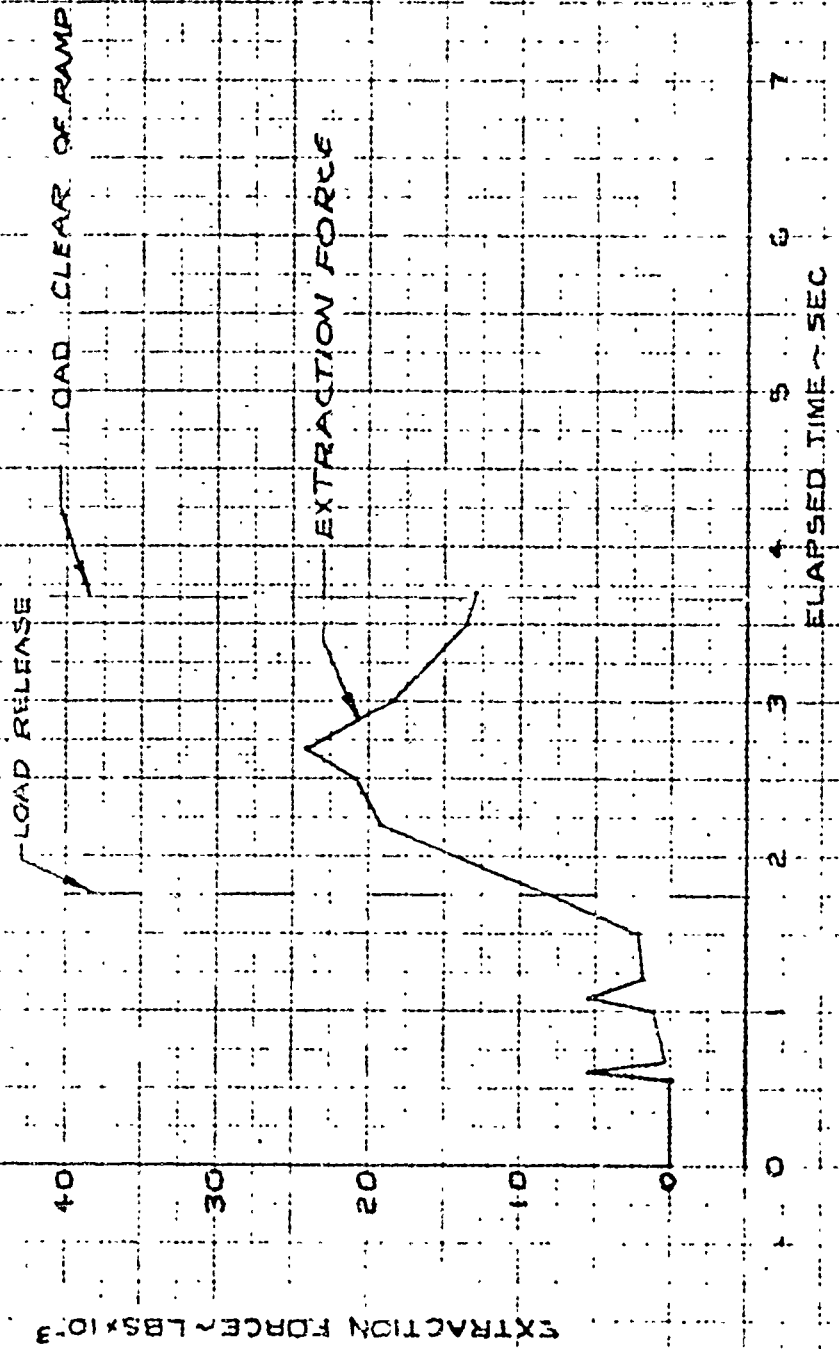


FIGURE D-70

6008
ADS 530

REVISED 4/12/65
5-4-65 JAD JAD

PREPARED BY TED
DATE 5-17-65
CHECKED BY _____

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-41

PETAL DOOR ACTUATOR LOADS

MODEL C-141A

AF63-B/TT

LAC 6008

FLIGHT ~ 100

DATE: 4-13-65

DROP NO. ~ 7

DROP WT. ~ 18,300

SHEET 5 OF 6

NOTE:

SEE FIGURE 31 SHEET 1 OF 5 FOR
RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION.

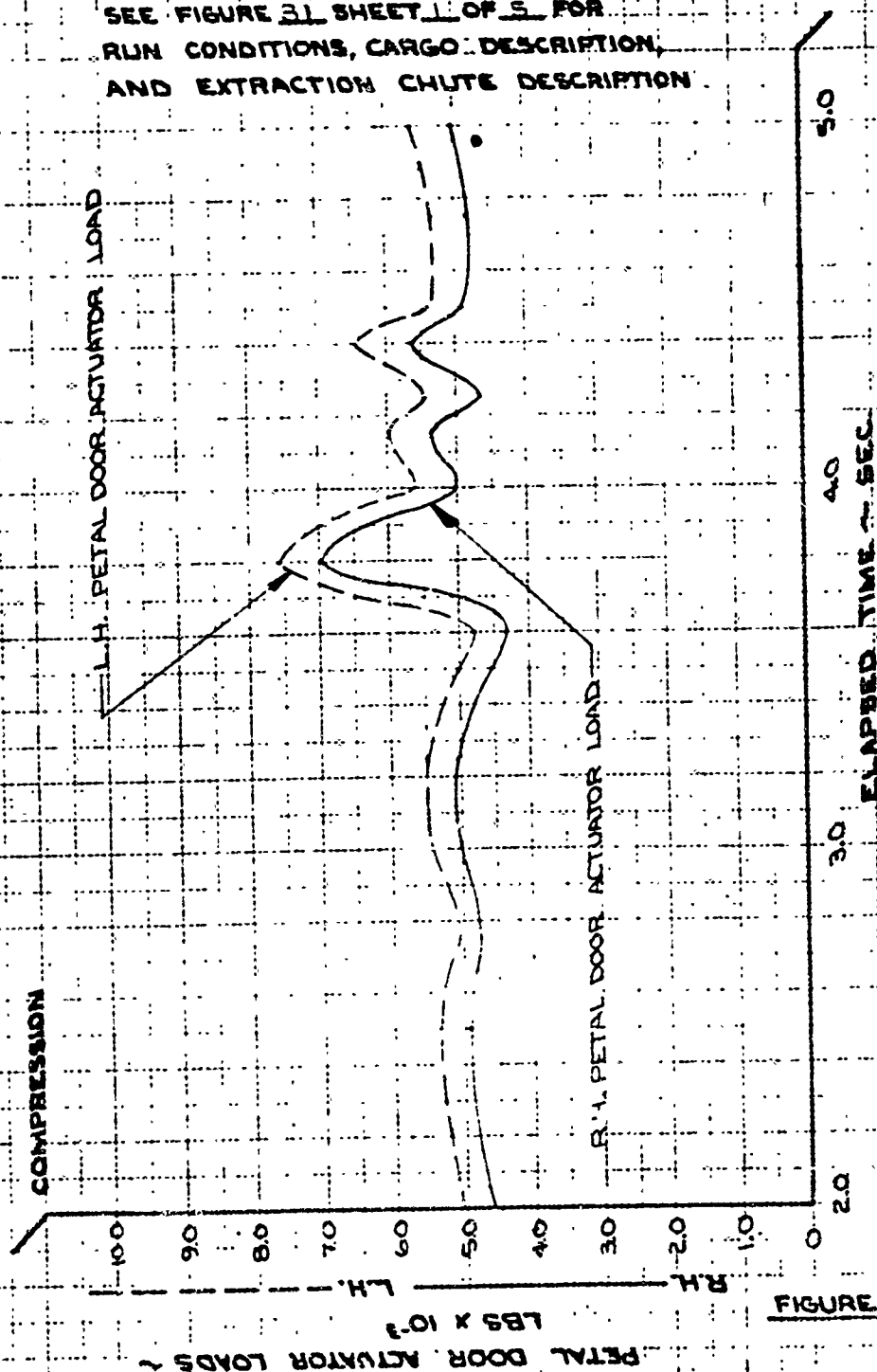


FIGURE D-7E

6008
ADS-53E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM
Checked			TITLE			D-42
Approved					Model C-141A	Report No ER 5473

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077

LAC 6009

FLIGHT 100

TEST DATE: 4-13-65

G.W. 178,200 LBS. A/S 140 KCAS

C.G. 26.2% MAC. ALT. ~ 4,900 FT.

DROP WT. ~ 18,300 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	4.5
2	ANGLE OF PITCH	"	7.2
3	C.G. VERT. ACCEL.	g's	1.399
4	C.G. LONG. ACCEL.	"	- 0.057
5	VERT. ACCEL. @ F.S. 277	"	1.304
6	VERT. ACCEL. @ F.S. 1632	"	N.A.
7	VERT. BEND. @ F.S. 1048	IN.-LBS X 10 ⁻⁶	13.03
8	VERT. BEND. @ F.S. 1568	"	1.349
9	BENDING ~ M'x @ HBL 44L	"	- 0.240
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	- 2.430
11	PITCH TRIM ACTUATOR ~ S'z	"	- 2.143
12	R.H. RAMP ACTUATOR LOAD	"	0.810
13	L.H. " " " "	"	0.290
14	R.H. SPIDER ARM LOAD	"	4.600
15	L.H. " " " "	"	5.070
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.960
17	L.H. " " " "	"	7.560
18	BENDING ~ M'x @ VSS	IN.-LBS. X 10 ⁻⁶	0.132
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁸	2.410
20	L.H. " " " "	"	2.140
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.242
22	L.H. " " " "	"	- 2.780
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	24.0
25	CARGO. LONG. ACCEL.	g's	1.32

FCW
 DATE 4-14-65
 JWD

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-43

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF638077 LAC 6008

TEST DATE 4-14-65

FLIGHT 101 DROP NO. 8

SHEET 1 OF 7

CARGO WT. 18820 LBS.

RUN CONDITIONS

1. G. W. 179,400 LBS.
2. C. G. PRIOR TO DROP 26.7 %MAC
3. C. G. AFTER DROP 30.3 %MAC
4. FLAPS 16.7%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. $\alpha_H \sim 1.7$ DEG (A/C N.U.)

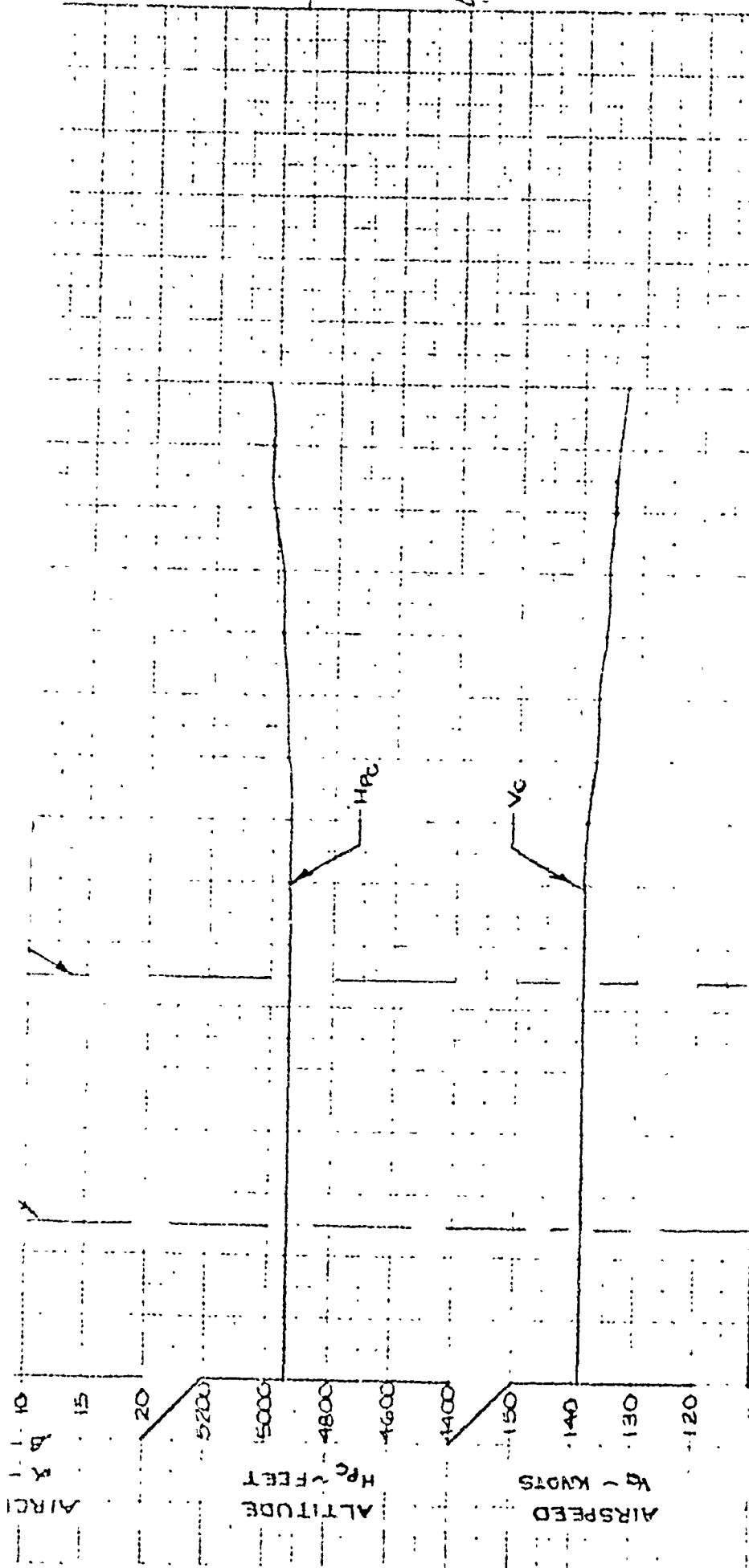
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ FS 847
 VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. 30
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE D-2A



REVISED
 12-14-65
 MBH

REVISED
 5-4-65 PWD
 JWD

6008
 AD544A

6008
ADS-54B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40

F_c F_a F_r

CONTROL FORCES ~ LBS.

1. 4 34003 BNS 92 SCORON 809

T.E. UP

20 15 10 5 0 5

AILERON POSITION ~ DEG.



PSA
4-14-65
JWD

ER 5473
MODEL C-141A
D-44

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 4-14-65
FLIGHT 101 DROP NO. 6
SHEET 2 OF 7
CARGO WT. 18820 LBS

NOTE:
SEE FIGURE 2, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

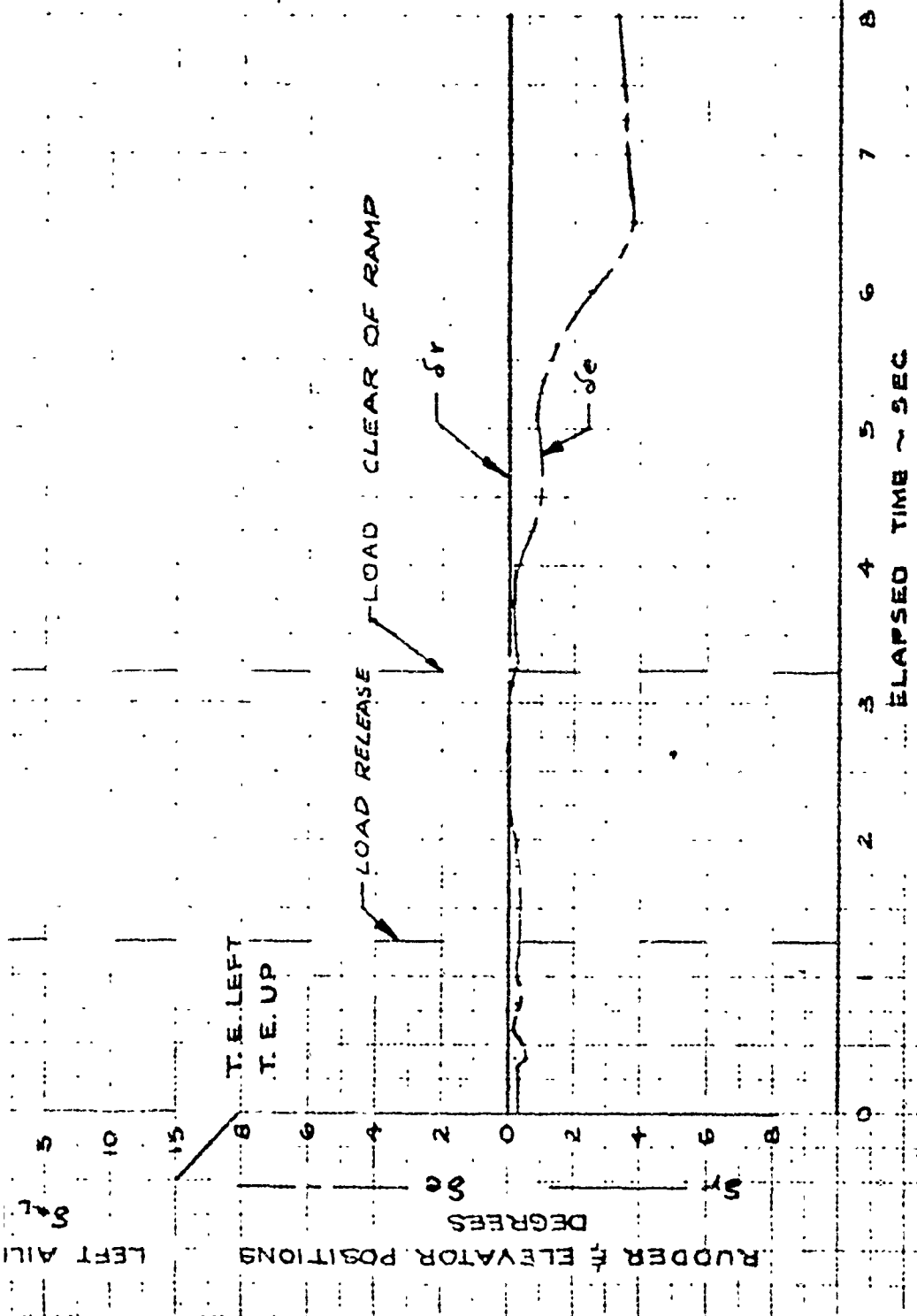


FIGURE C-5B

6008
ADSC-13

REVISED 5-4-65 JWD
REVISED 4/11/66 JWD

6008
AD854C

17.4 7007.8002.30VON BOT

PITCHING ACCELERATION

DEG/SEC²

NOSE UP

40

20

0

20

40

UP ACCEL.

3.0

2.8

2.6

2.4

2.2

2.0

1.8

CELERATIONS ~ 9

S 277 --- N₂ GFS1637 ---

NOTE:

$\ddot{\theta}$ CALCULATED FROM N_2 DATA.

$\ddot{\theta}$

LOAD RELEASE LOAD CLEAR OF RAMP

N 6 P 6 10.27

FCW
4-15-65
JWP

ER 5473
C-141A
D-45

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C141A
AFG3-8077 LAC 6008
TEST DATE: 4-14-65
FLIGHT 101 DROP NO. 8
SHEET 3 OF 7
CARGO WT. 18820 LBS.

NOTE:
SEE FIGURE D-SC SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

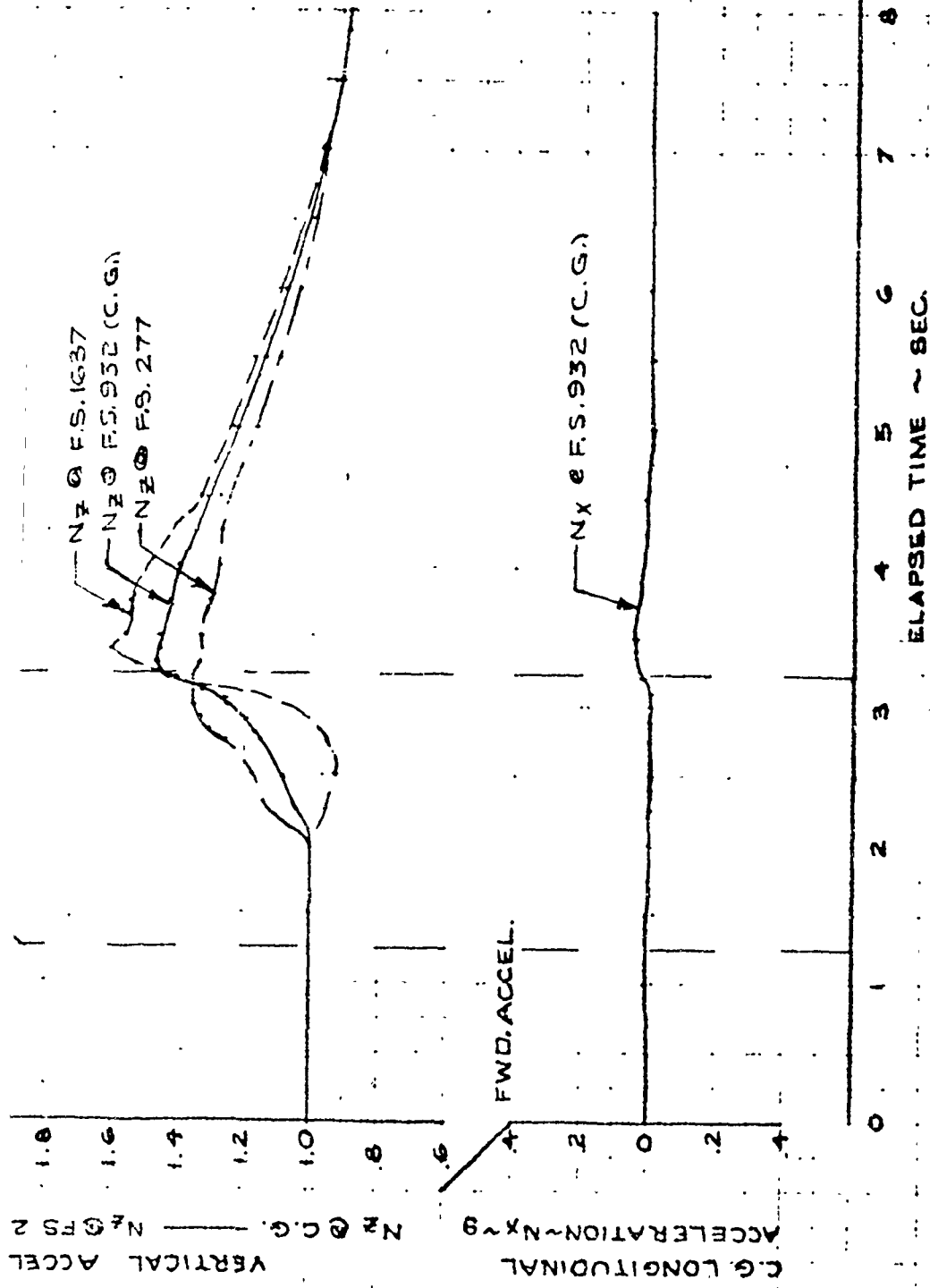


FIGURE D-SC

6008
ADS 540

REVISED 5-4-65 JWP
REVISED 4/21/65 JWP

600P
ADS 54D

RAMP LIP

LOAD CG. POSITION

LOAD ACCEL.

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

JOB NO: 526 SUB CODE 4.2

LOAD CG. POSITION ~ FUS. STA.

LOAD ACCELERATION

g's

1500
1400
1300
1200
1100
1000
900
800
700
600
500

2.0
1.0
0



RSR
4-14-65
CHECKED BY JWS

ER 5473
C-141A
/D-46

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-14-65
FLIGHT 101 DROP NO. 8

SHEET 4 OF 7

CARGO WT. 18820 LBS.

NOTE:
SEE FIGURE D-3D, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

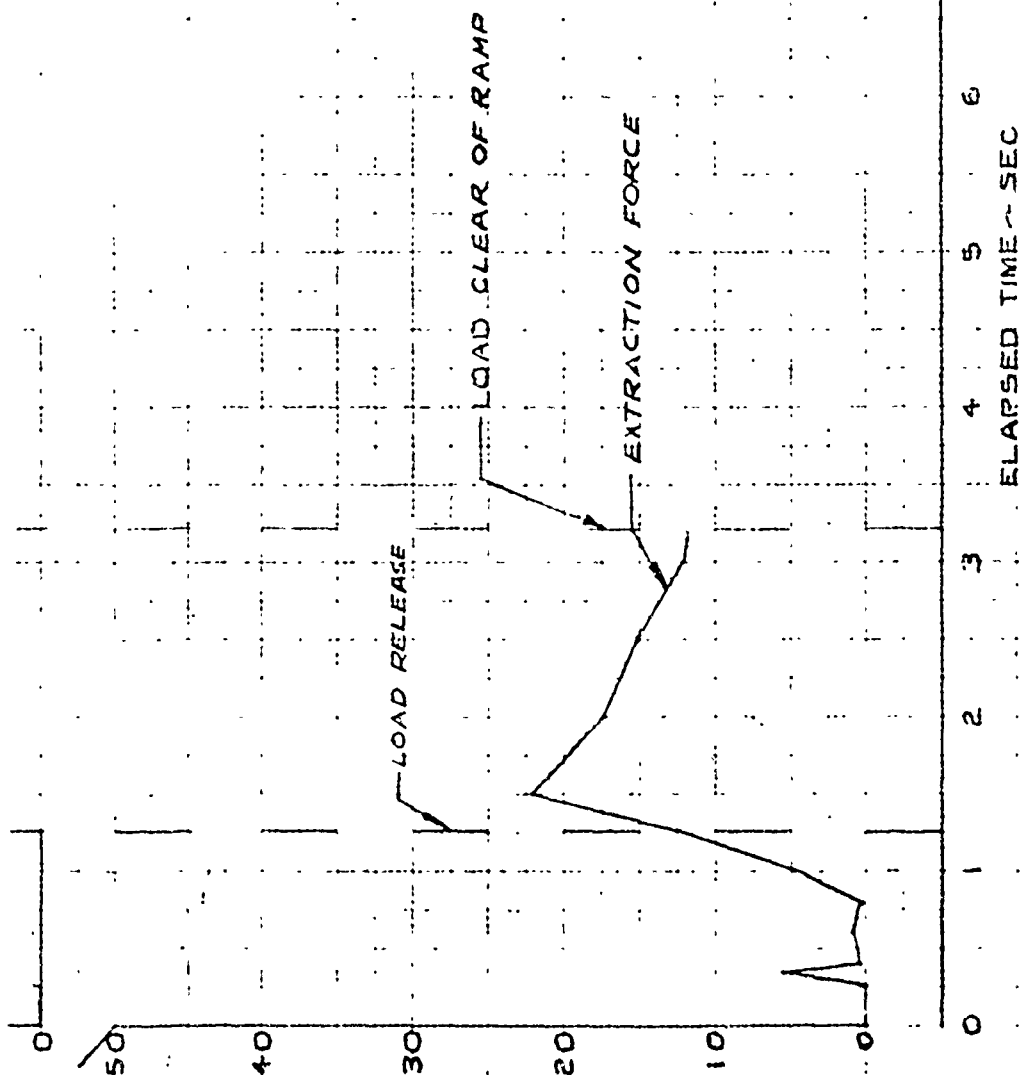


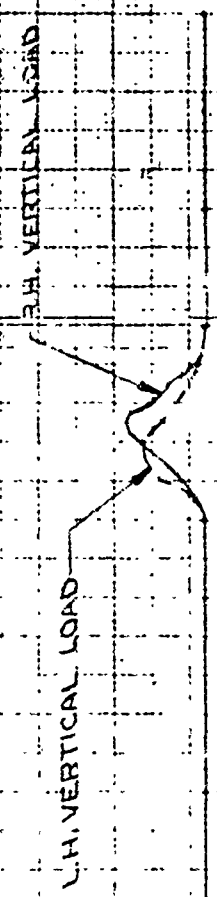
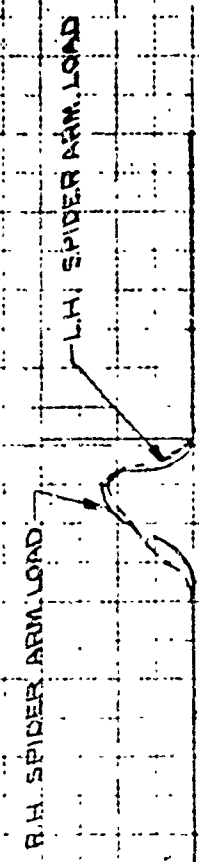
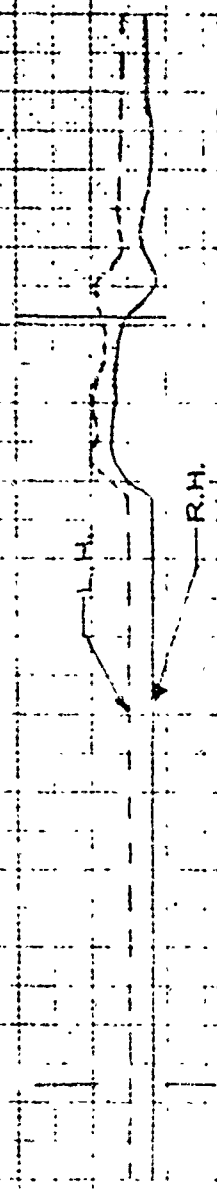
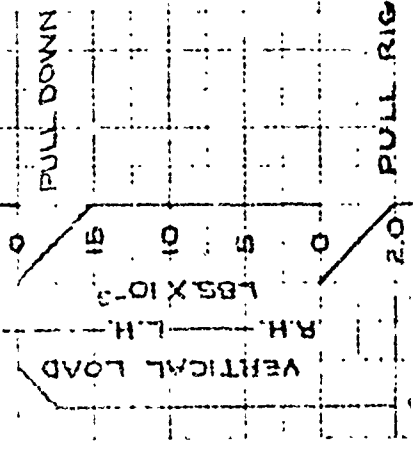
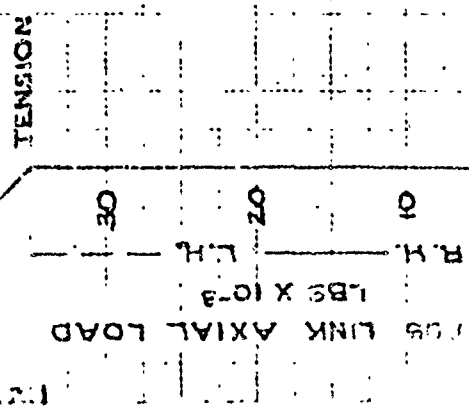
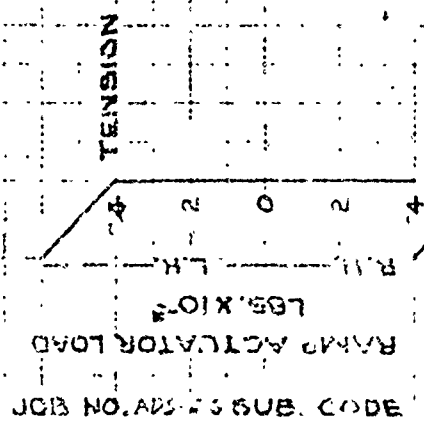
FIGURE D-3D

6008
ADS 540

REVISED 4/21/65
5-4-65

2008-554E

REV



MAXIMUM LOAD

SERIAL NO. **23A**
 DATE **4-15-65**
 FILE **44D**

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-47**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
 AF **63-8077** LAC **6008**
 TEST DATE **4-14-65**
 FLIGHT **101** DROP NO. **8**
 SHEET **5** OF **7**
 CARGO WT **18820 LBS**

NOTE:
 SEE FIGURE 8A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

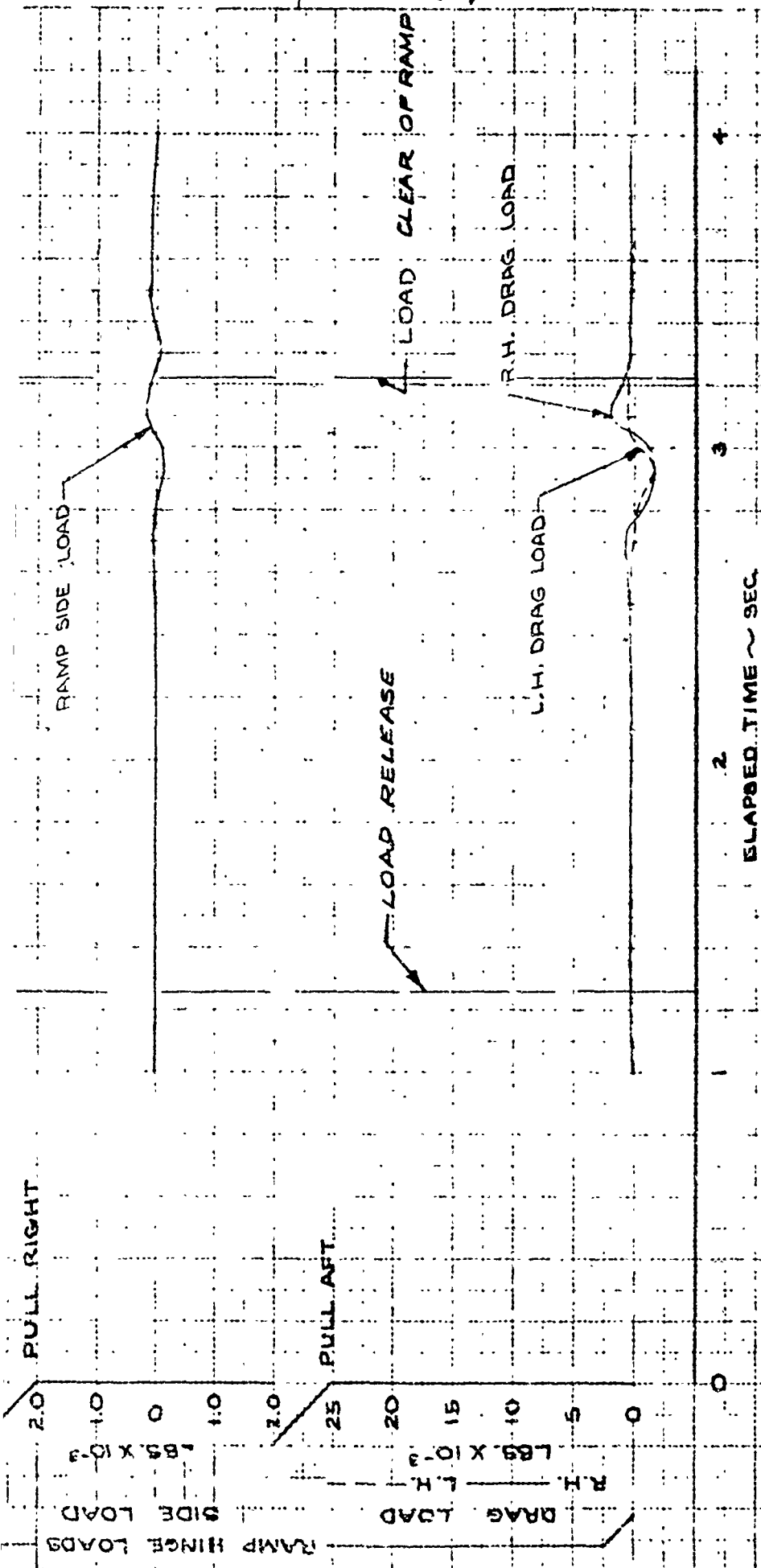


FIGURE D-8E

6008
 ADS-54E

REVISED 7/21/65
 5-4-65 JMW JWP

600B
ADS-54E

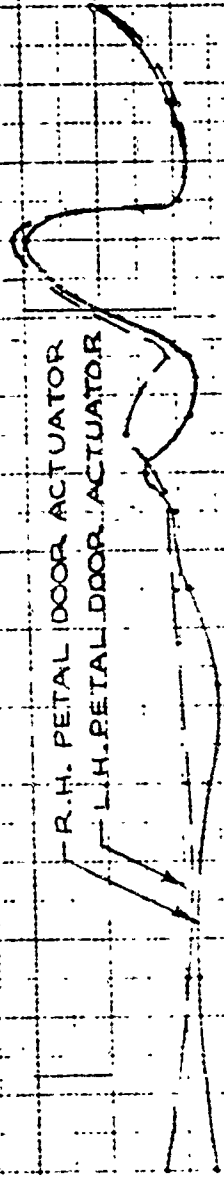
COMPRESSION

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³

RH ——— LH ———

2 1 0 -1 -2 -3 -4 -5 -6 -7

R.H. PETAL DOOR ACTUATOR
L.H. PETAL DOOR ACTUATOR

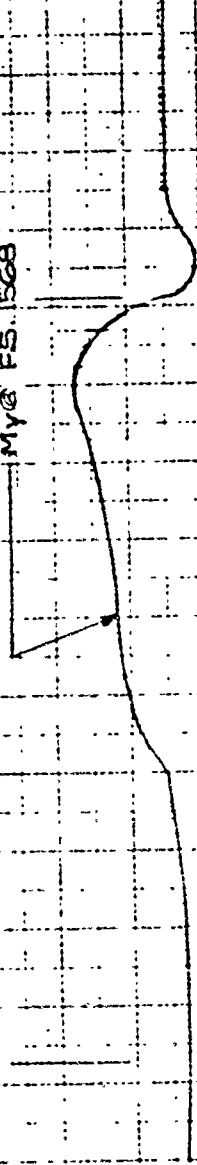


VERTICAL BENDING ~ FS 1568

INCH-LBS. X 10⁻⁶

2 1 0 -1 -2 -3 -4 -5 -6 -7

MYG FS 1568



DOWN LOAD

LOAD RE EDGE

LOAD CLEAR OF RAMP

PREPARED BY RSA
DATE 4-15-65
CHECKED BY YOD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-43

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-B077

LAC 6008

TEST DATE 4-14-65

FLIGHT 101

DROP NO. 8

SHEET 6 OF 7

CARGO W.T. 18820 LBS.

NOTE:

SEE FIGURE 2-8A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

My 2 FS 104B

ELAPSED TIME - SEC.

DOWN LOAD

FIGURE 2-8F

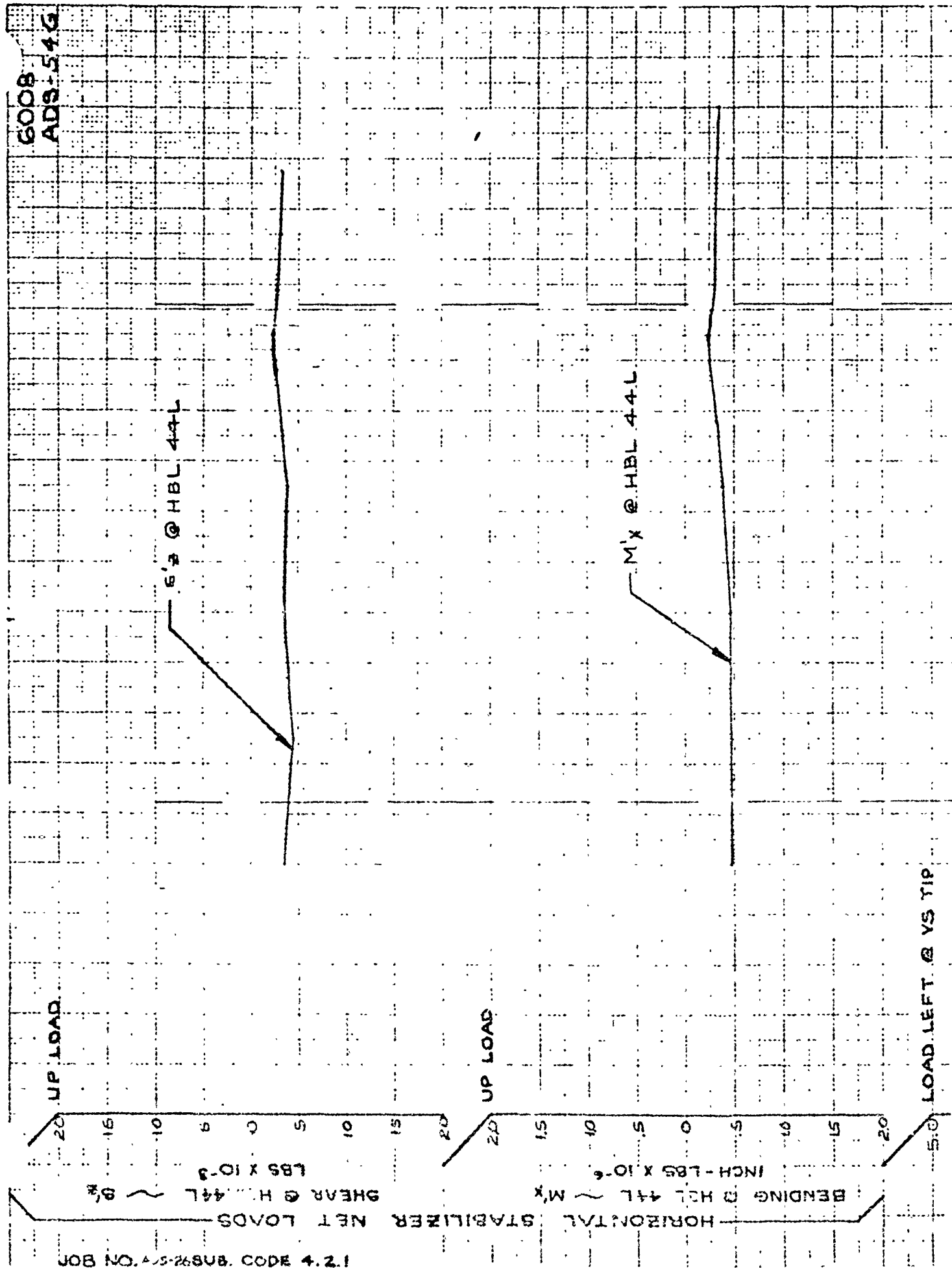
VERTICAL BENDING - F.S. 104B
INCH-LBS. X 10⁻⁶

6008

ADS 547

REVISED 5-4-65 AND JEP

6008
AD3-54G



PREPARED BY **RSA**
DATE **4-14-65**
CHECKED BY **JWD**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **D-49**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF63-8077

LAC 6008

TEST DATE **4-14-65**

FLIGHT 101

DROP NO. **8**

SHEET **7** OF **7**

CARGO WT. **18820 LBS**

NOTE:
SEE FIGURE **2-56** SHEET **1** OF **7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

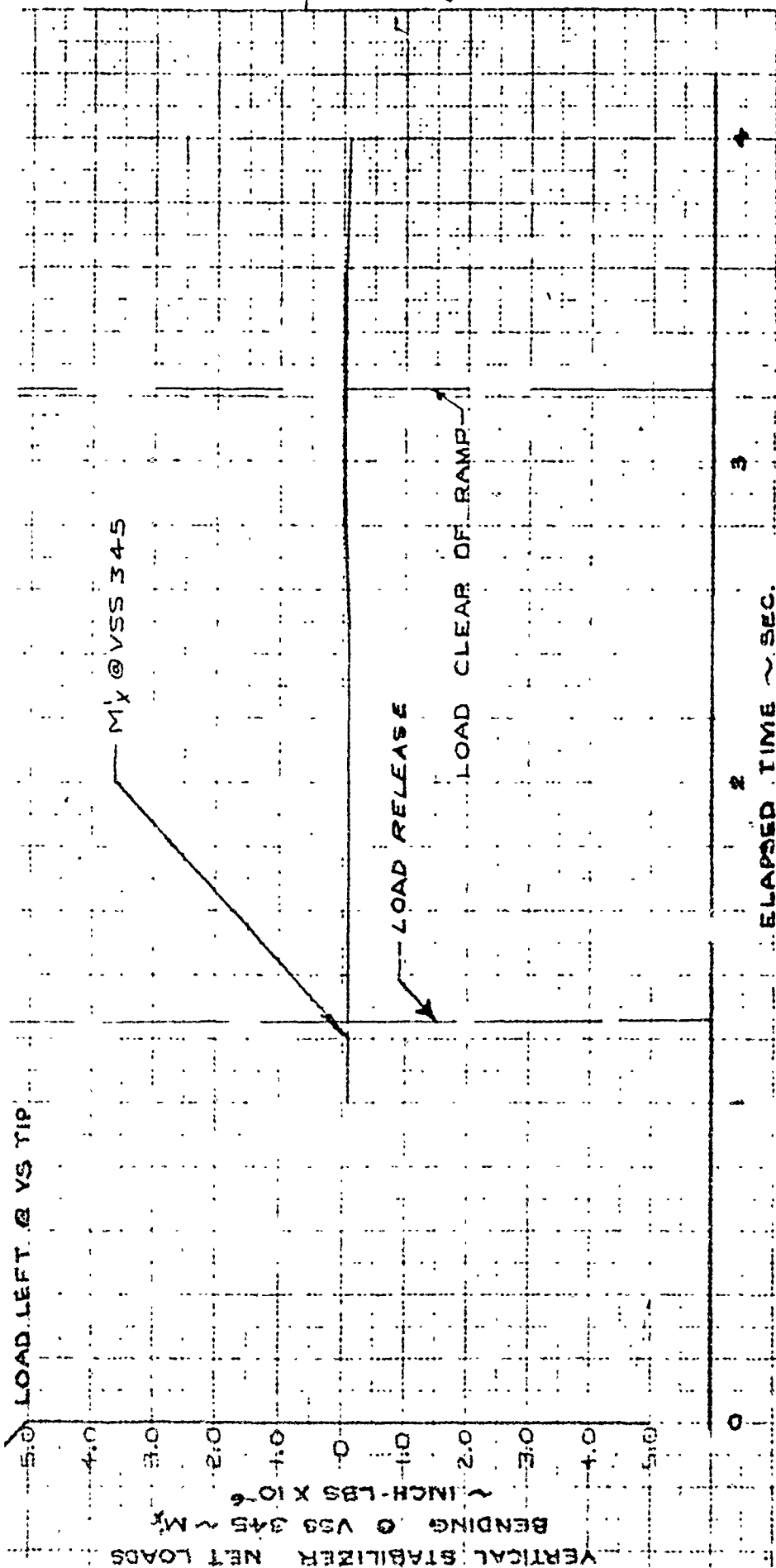
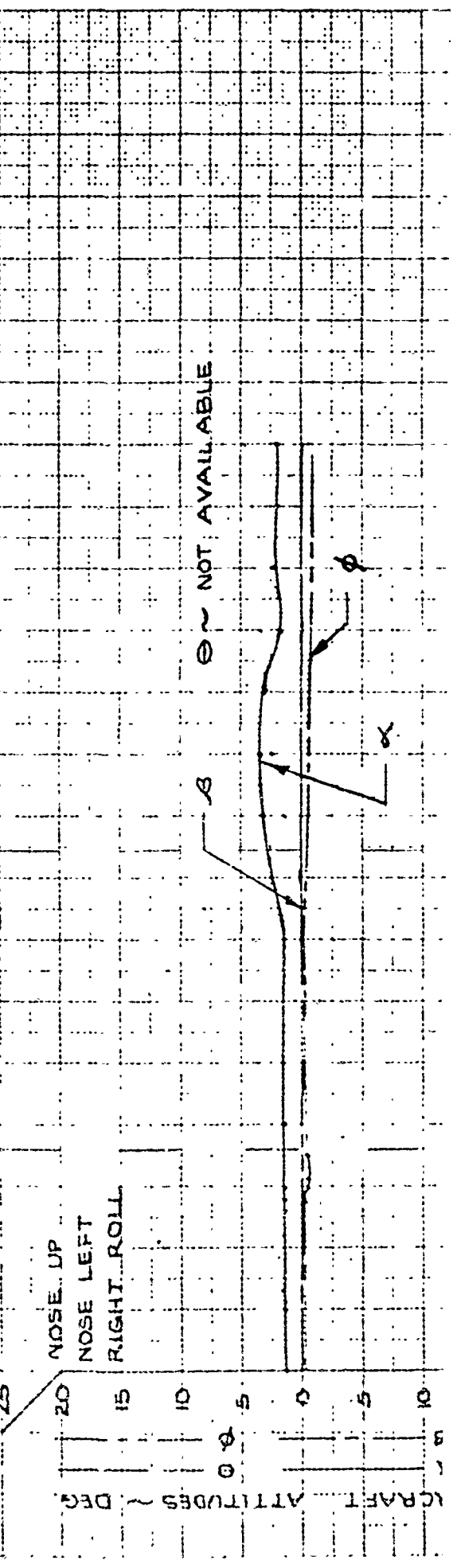
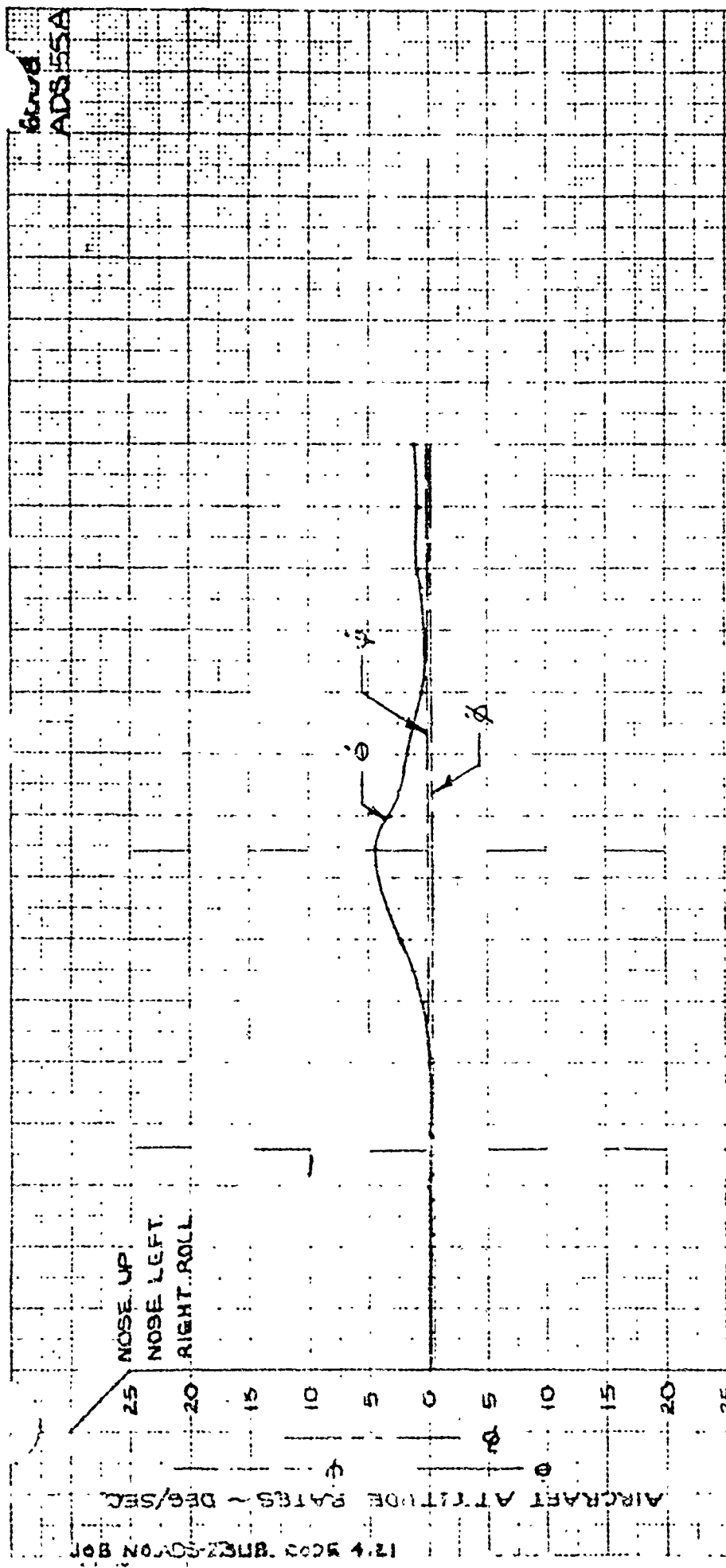


FIGURE **2-56**

6008
ADS-54.G

REVISED 12/21/65
5-4-65 (JWD) JWD

6000
AD855A



PREPARED BY FCW
 DATE 4-11-65
 CHECKED BY JWD

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE D-50

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF338077 LAC 6008
 TEST DATE 4-15-65
 FLIGHT 102 DROP NO. 9
 SHEET 1 OF 1

CARGO WT 18330 LBS.

RUN CONDITIONS

1. G.W. ~ 177900 LBS
2. C.G. PRIOR TO DROP ~ 26.6 % MAC
3. C.G. AFTER DROP ~ 30.2 % MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. α ~ 1.5 DEG (A/C N.U.)

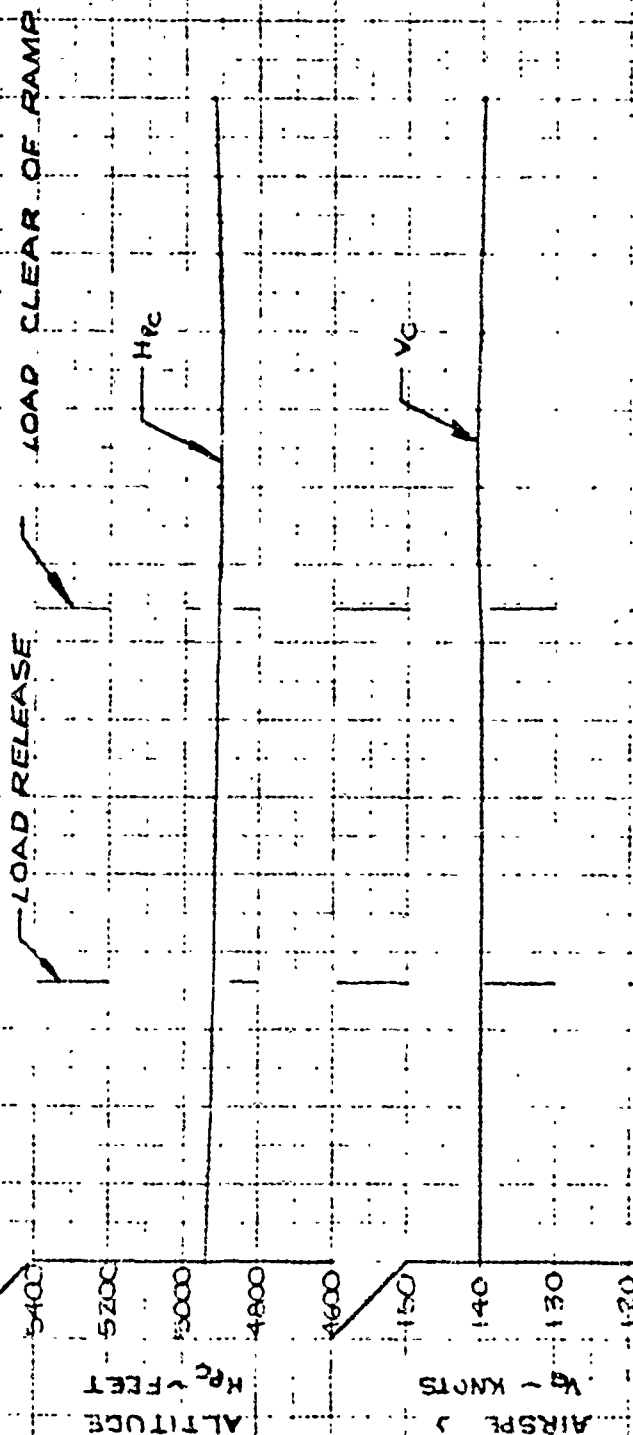
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3 247
 VERT. ~ WL 178

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22"
3. RATED CHUTE FORCE / CARGO WT. 0.65
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 2-3A



REVISED
 12-14-65
 MBH

6008
 ADS-55A
 REVISED 5-4-65 JWD



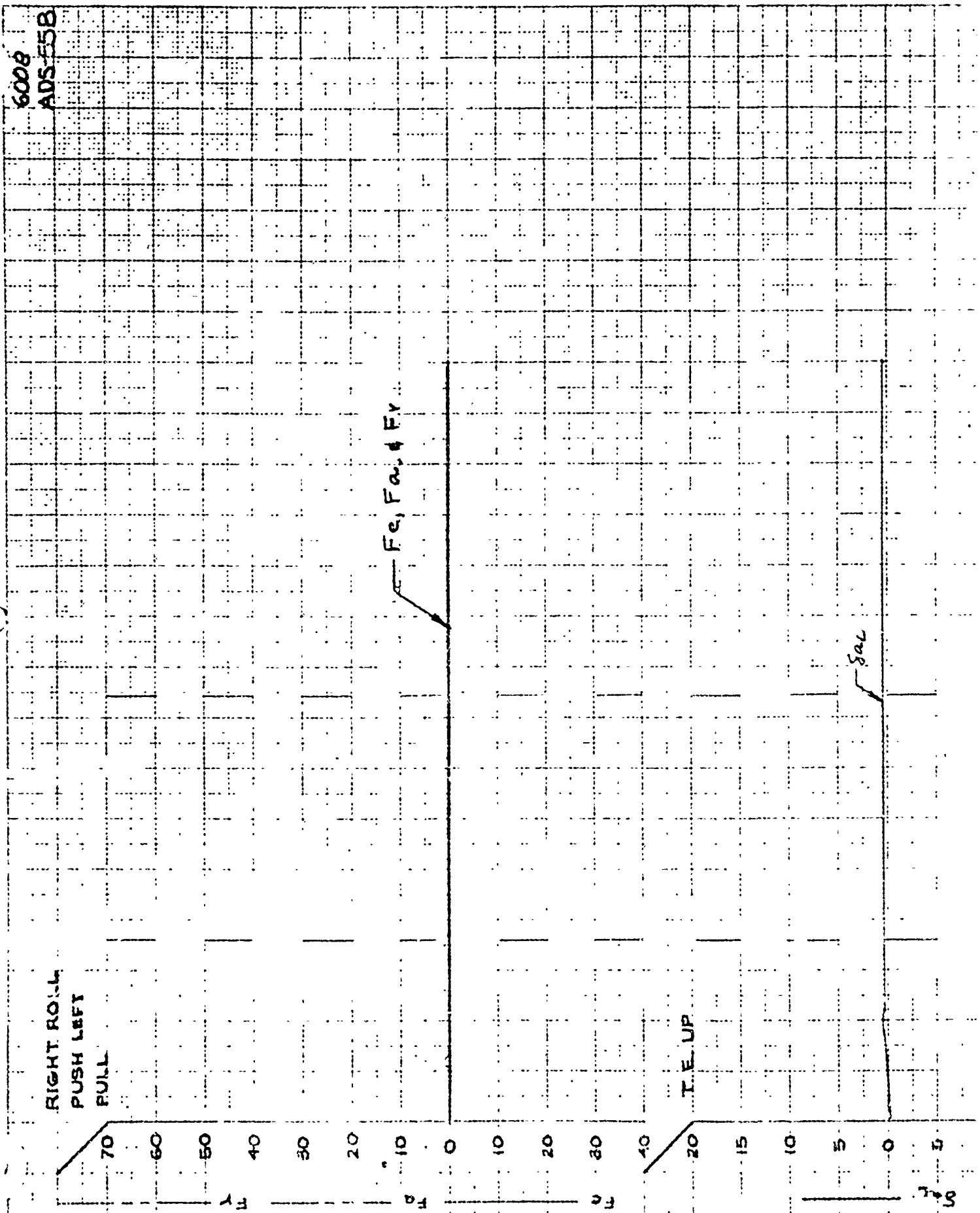
JOB NO. AD3-27SUB. CODE 4.21

CONTROL FORCES ~ LBS.

RIGHT ROLL
PUSH LEFT
PULL

T.E. UP

TAILERON POSITION ~ DEG.



PREPARED BY FCW
 DATE 4-11-65
 CHECKED BY JWD

LOTTING D. GEORGIA COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-51

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 4-15-65

FLIGHT 102

DROP NO 9

SHEET 2 OF 5

CARGO WT 18330 LBS

NOTE:
 SEE FIGURE 2-9B SHEET 1 OF 4
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

LOAD RELEASE LOAD CLEAR OF RAM

side

T.E. LEFT
 T.E. UP

ELAPSED TIME - SEC

RUDDER & ELEVATOR POSITIONS

DEGREES

FIGURE 2-9B

6008
 ADS-558

6008
ADS-55C

JOB NO. ADS-2 SUB. CODE 4.2.1

NOSE UP

PITCHING ACCELERATION

DEG/SEC²

θ

NOTE:
 θ CALCULATED FROM N_z DATA

UP ACCEL.

ACCELERATIONS ~ g

N_z @ F.S. 1637

N_z @ F.S. 1637



TESTED.
DATE 4-16-65
FWD

REPORT NO. ER 5743
MODEL C-141A
PAGE D-52

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-B077 LAC 6008
TEST DATE 4-15-65
FLIGHT 102 DROP NO. 9

SHEET 3 OF 5

CARGO WT 13,330 LBS

NOTE:
SEE FIGURE D-9A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

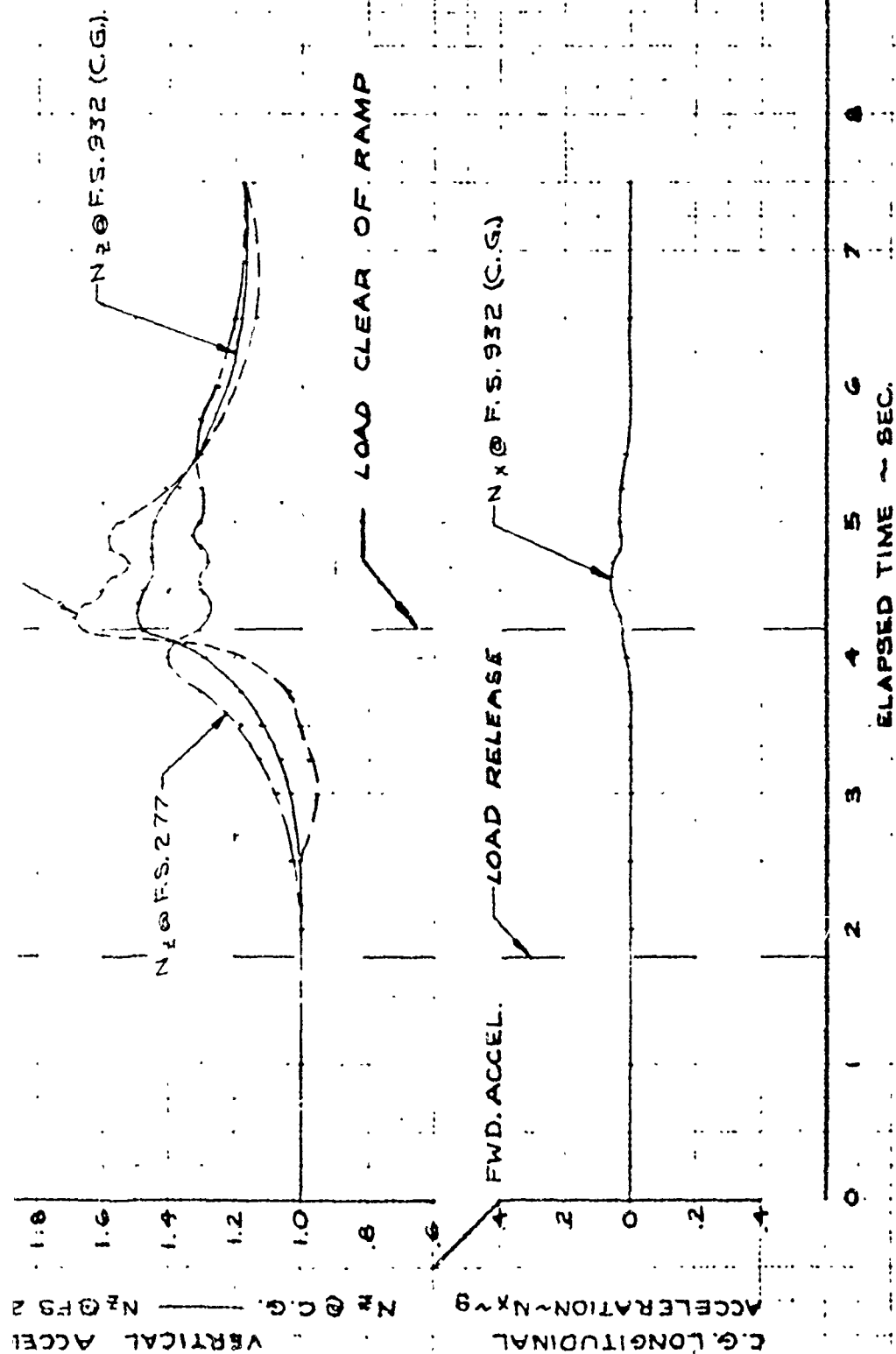


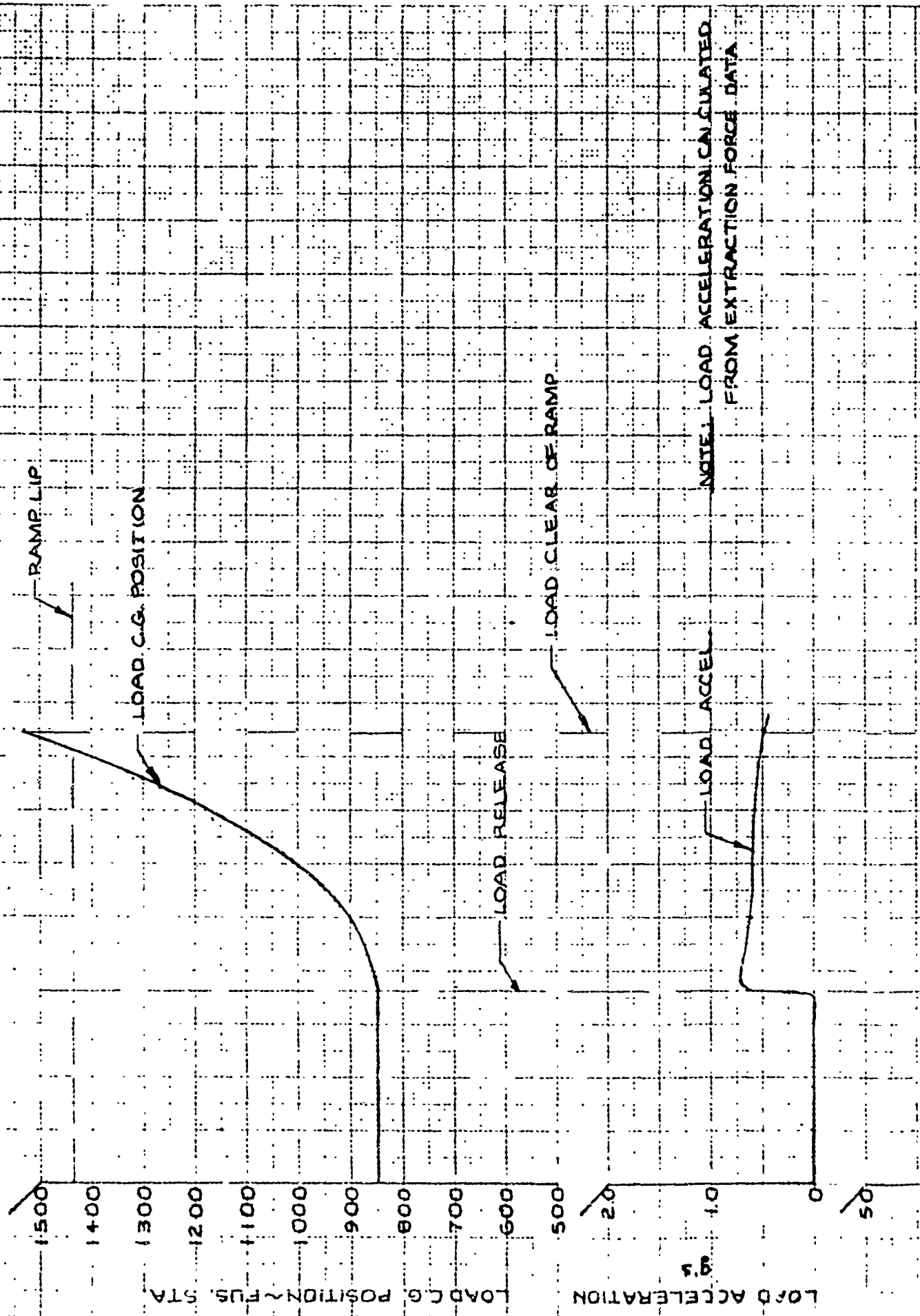
FIGURE D-9C

6008
ADS-55C

REVISED 5-9-66
7m

6000
ADS-55D

JOB NO ADS-275UB CODE 4.21



PREPARED BY FCW
DATE 4-19-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-53

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-15-65
FLIGHT 102 DROP NO. 9

SHEET 4 OF 5

CARGO WT. 18,330 LBS.

NOTE:
SEE FIGURE D-90, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

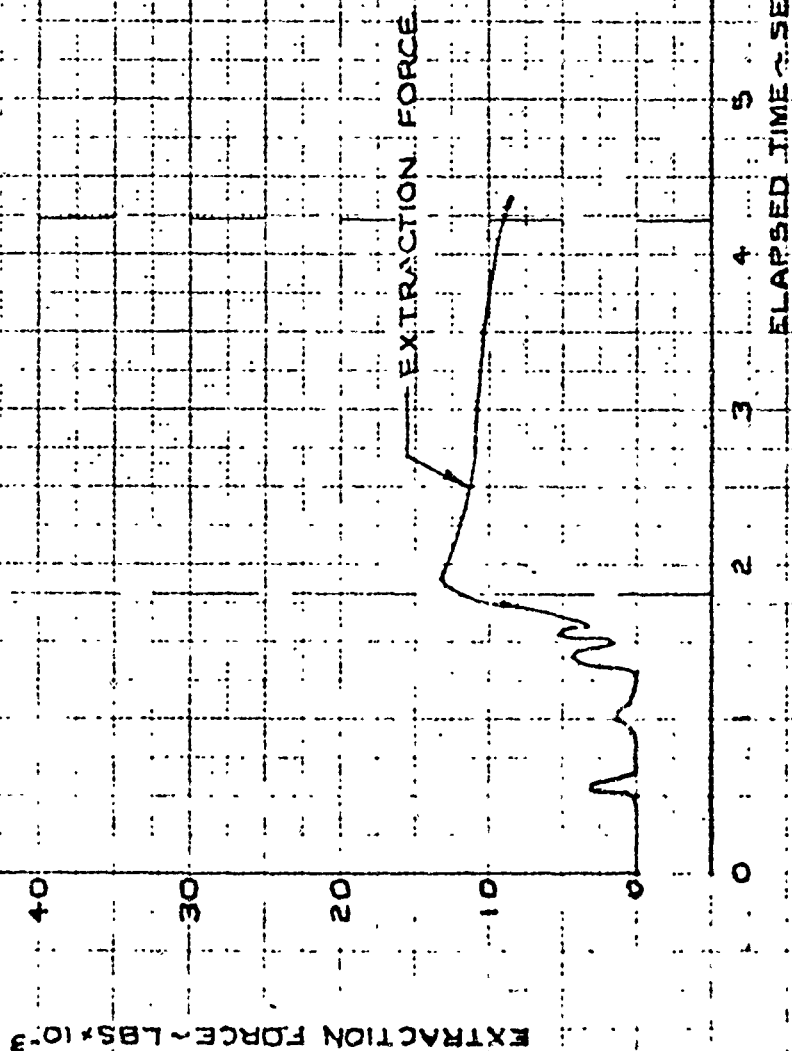


FIGURE D-90

6008
ADS-550

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

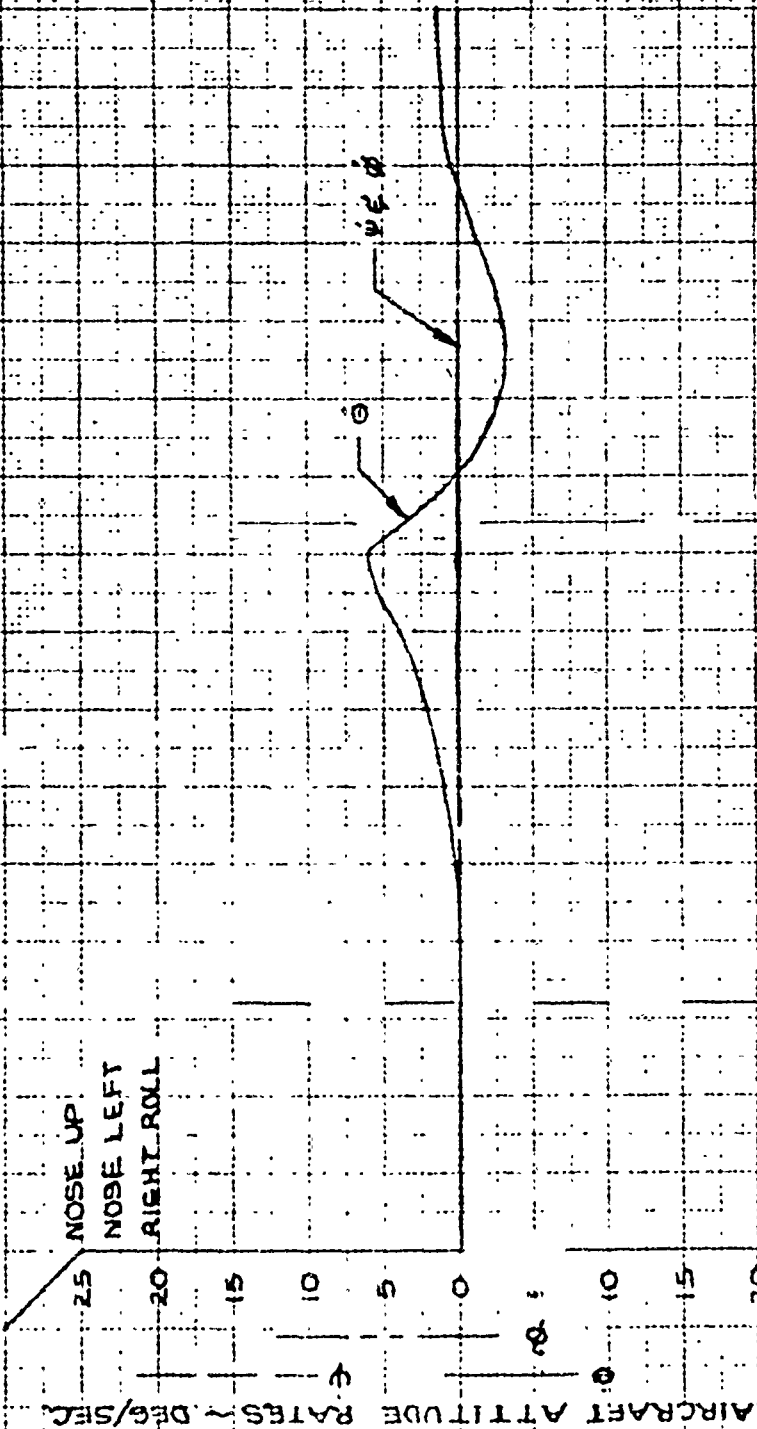
PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A
 AF 63-8077 LAC 6008
 FLIGHT 102 TEST DATE: 4-15-65
 G.W. 177,900 LBS. A/S 141 KCAS.
 C.G. 26.6% MAC ALT. ~ 4,950 FT.
 DROP WT. ~ 18,330 LBS.

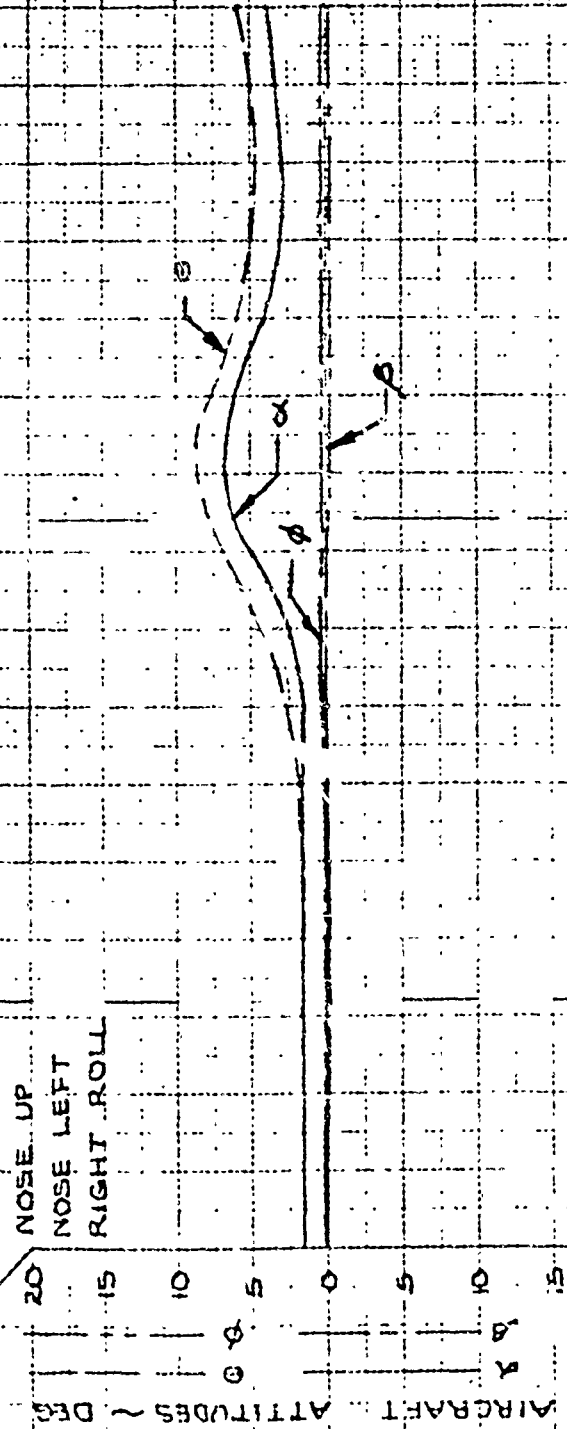
	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.5
2	ANGLE OF PITCH	"	N.A.
3	C.G. VERT. ACCEL.	g's	1.49
4	C.G. LONG. ACCEL.	"	0.08
5	VERT. ACCEL. @ F.S. 277	"	1.41
6	VERT. ACCEL. @ F.S. 1637	"	1.69
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	15.14
8	VERT. BEND. @ F.S. 1568	"	1.47
9	BENDING ~ M'x @ HBL 44L	"	- 0.271
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	- 2.560
11	PITCH TRIM ACTUATOR ~ S'z	"	- 1.684
12	R.H. RAMP ACTUATOR LOAD	"	0.785
13	L.H. " " " "	"	0.233
14	R.H. SPIDER ARM LOAD	"	6.480
15	L.H. " " " "	"	6.450
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.970
17	L.H. " " " "	"	6.760
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	4.070
20	L.H. " " " "	"	2.650
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.950
22	L.H. " " " "	"	- 0.850
23	RAMP HINGE TOTAL SIDE LOAD	"	0.200
24	EXTRACTION CHUTE FORCE	"	13.12
25	CARGO LONG. ACCEL.	g's	0.715

FIG. D-9E
 ADS-55E

6008
ADS-SWA



12.4 5008 BN502509N B01



12.4 5008 BN502509N B01

PREPARED BY **RSA**
DATE **4-20-65**
CHECKED BY **JWA**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **LR 5473**
MODEL **C-141A**
PAGE **D-55**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF638077 LAC 6008
TEST DATE **4-16-65**
FLIGHT 105 DROP NO. 10

SHEET **1** OF **7**

CARGO WT. 18,400 LBS

RUN CONDITIONS

1. G.W. ~ 178,500 LBS.
2. C.G. PRIOR TO DROP ~ 26.7% MAC
3. C.G. AFTER DROP ~ 29.7% MAC
4. FLAPS ~ 67%
5. GEAR UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. α_H ~ 1.8 DEG. (AC N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3847
VERT. ~ WL17B

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FORCE/CARGO WT. 0.28
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE D-10A

ALTITUDE
H_{PC} - FEET
AIRSPEED
V₀ - KNOTS

ELAPSED TIME - SEC

6008

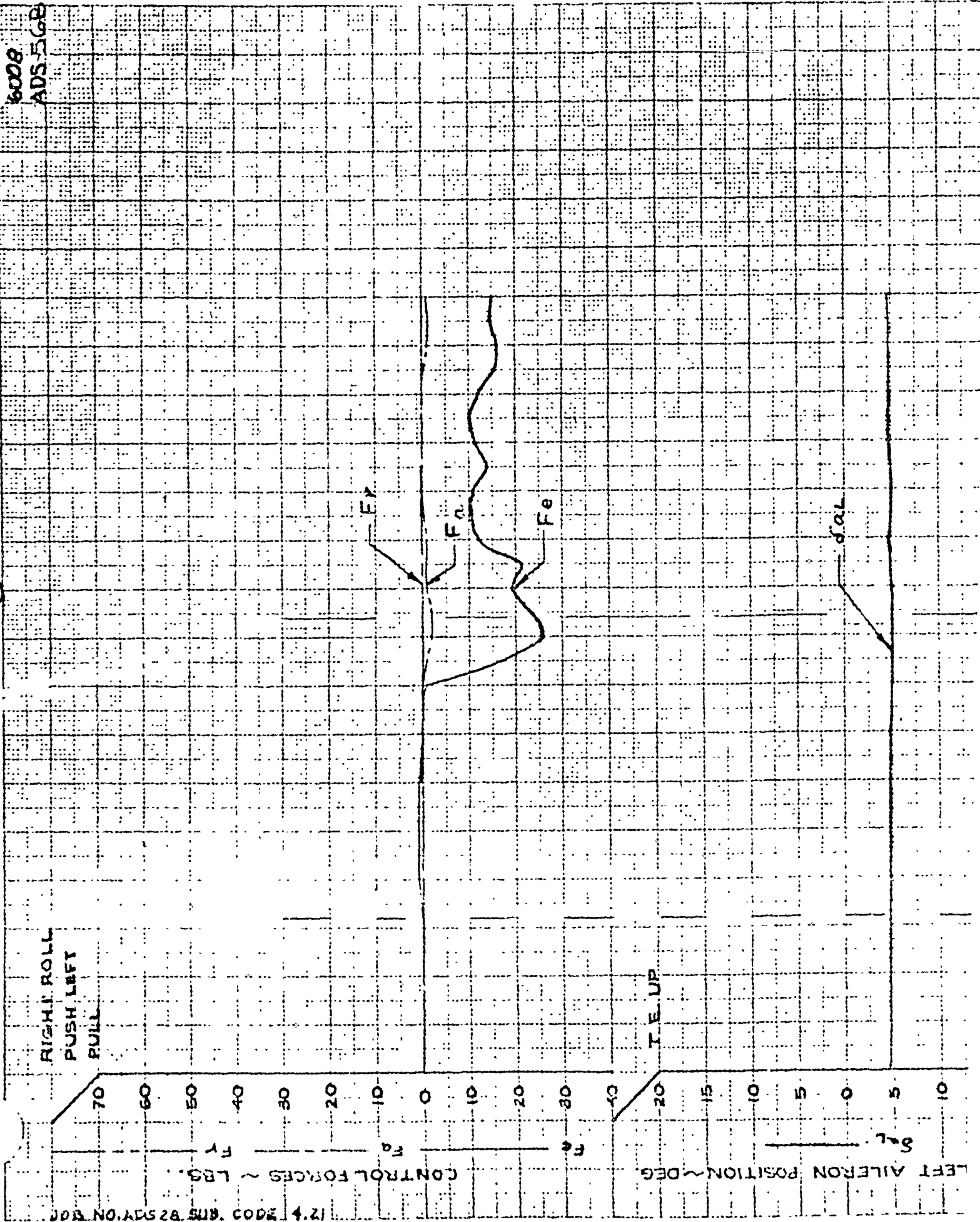
ADS-56A

REVISED 5-8-65

JWA

REVISED
12-14-65
M391

6008
ADS 56B



12.4 2003 GNS 8250A NO. 008

PREPARED BY **RSA**
 DATE **4-20-65**
 CHECKED BY **JWW**

REF ID: **ER 5473**
 MODEL **C-141A**
 DATE **D-56**

**TIME HISTORY OF AERIAL DELIVERY
 MANEUVER**

MODEL **C-141A**
AF 63 8077 **LAC 6008**
 TEST DATE **4-16-65**
 FLIGHT **103** DROP NO **10**
 SHEET **2** OF **7**
CARGO WT 18400 LBS.

NOTE:
 SEE FIGURE 2-10B SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

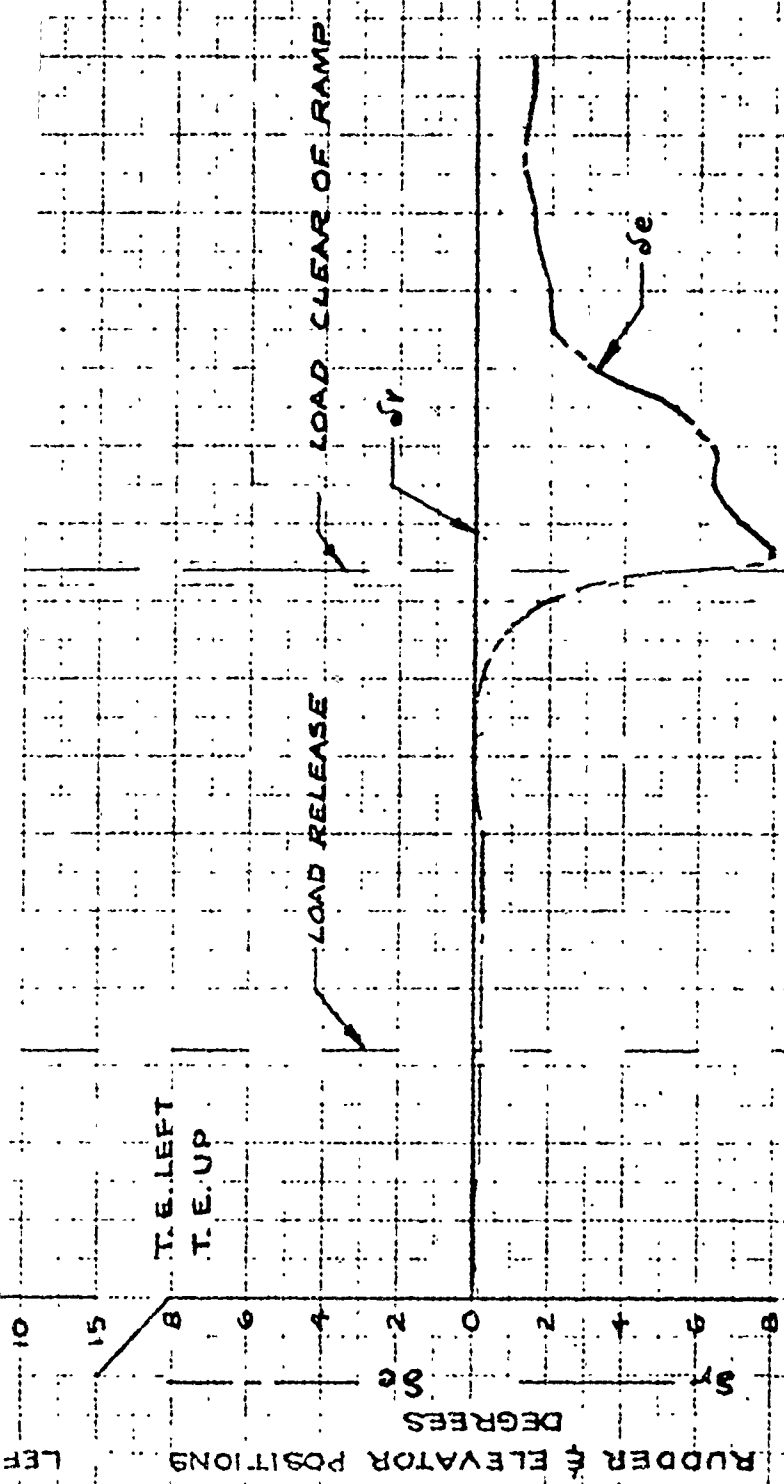
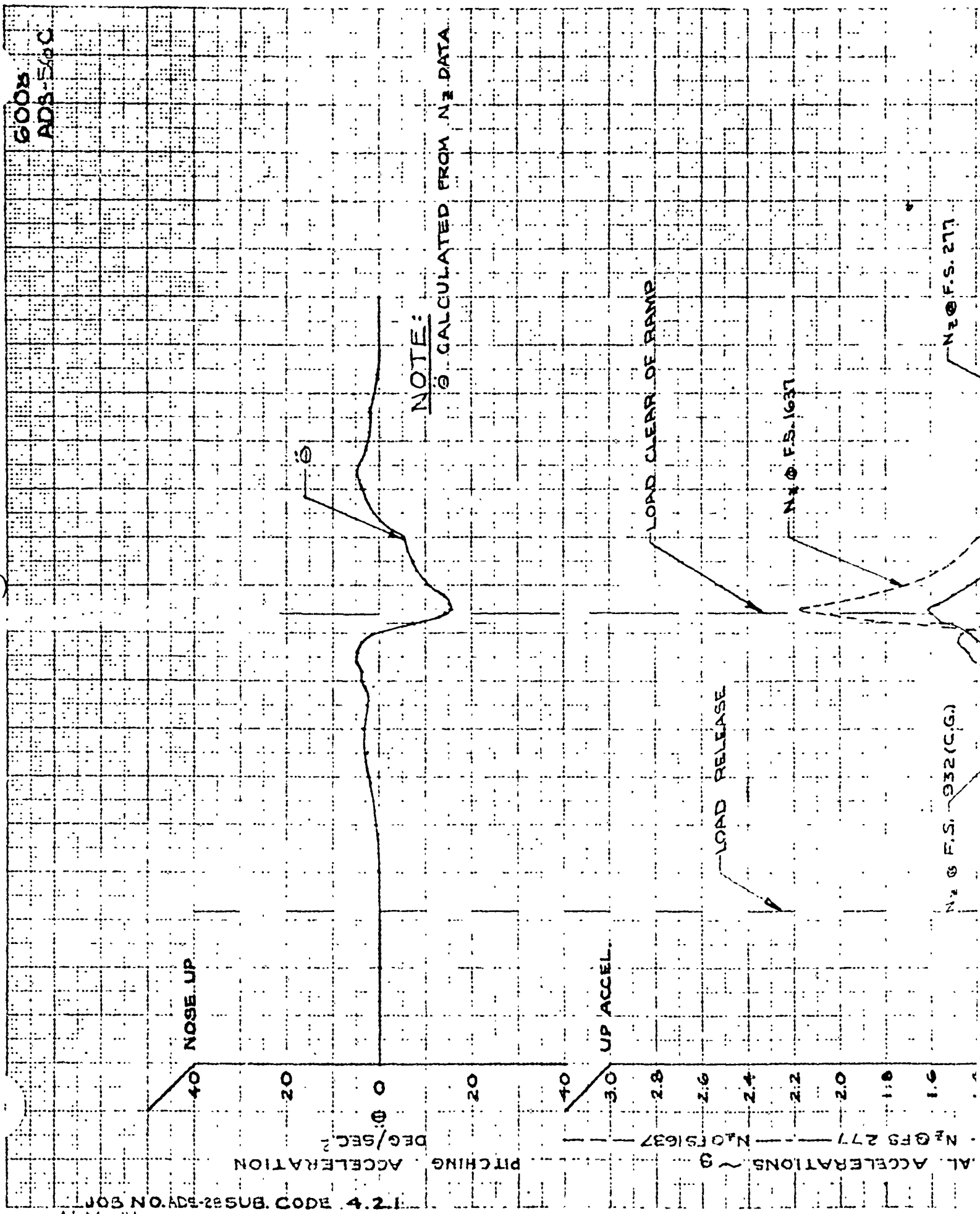


FIGURE 2-10B

6008
ADS-56B
 REVISED 5-4-65
JWW

6008
ADB-56C



JOB NO. ADB-285 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY

MODEL C141A
AF G3-8077 LAC 6008

TEST DATE 4-16-65

FLIGHT 103 DROP NO. 10

SHEET 3 OF 3

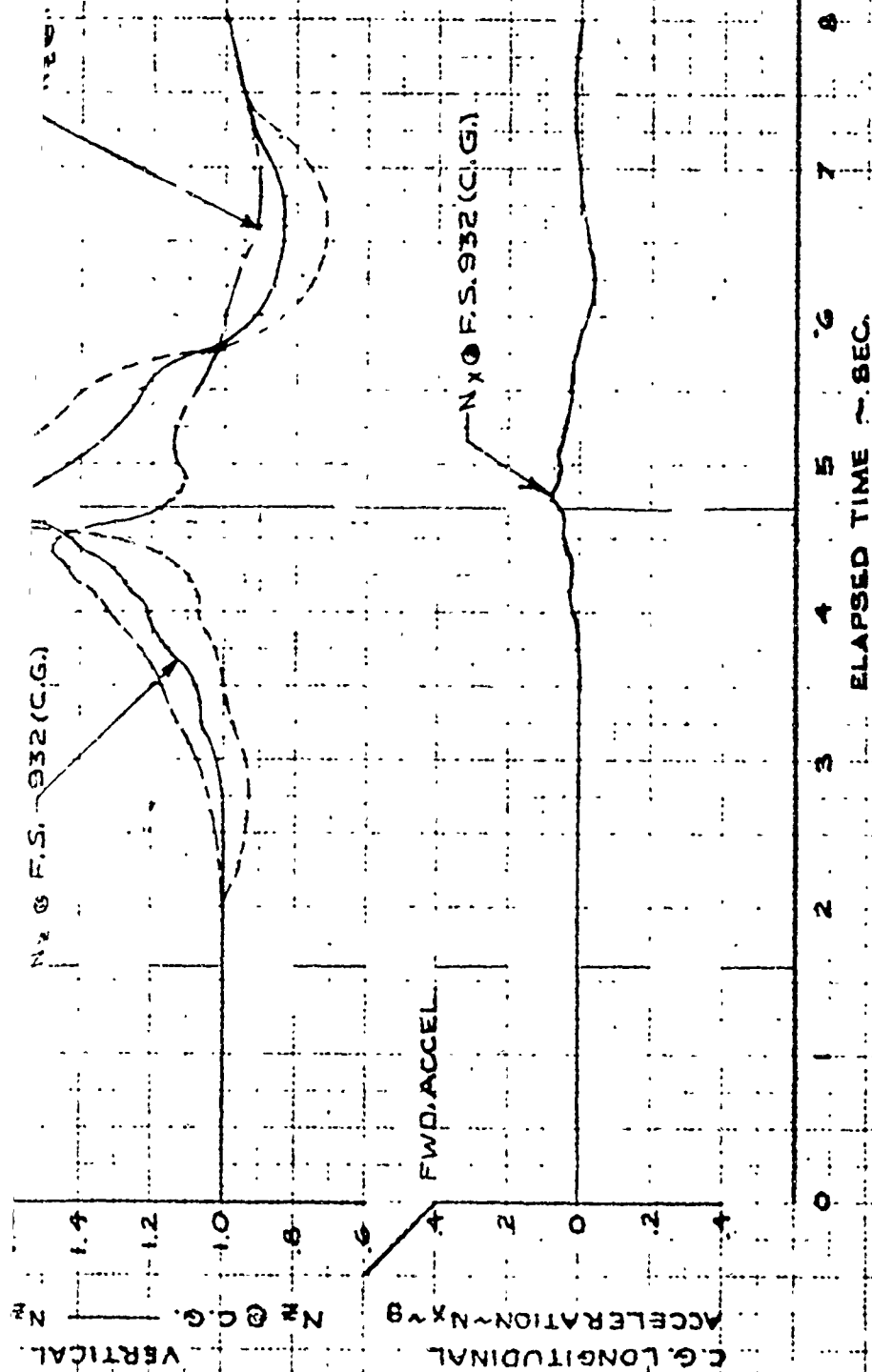
CARGO WT 18,400 LBS

NOTE:
SEE FIGURE D-10 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-10 C

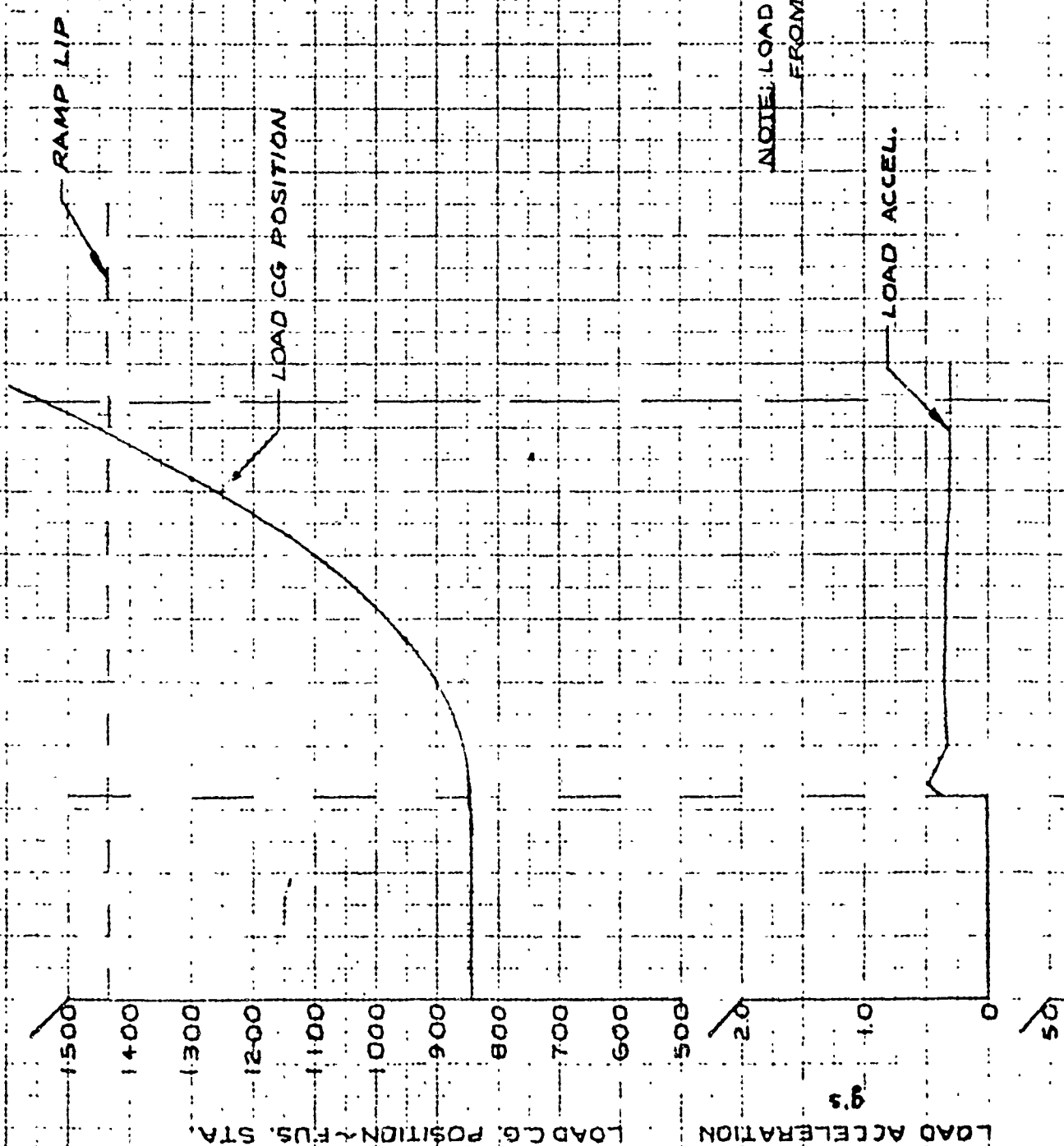
6008
ADS-56C

REVISED 5-2-65



6008
AD856D

JOB NO. 125-28 SUB CODE 42



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

RAMP LIP

LOAD CG POSITION

LOAD ACCEL.

LOAD CG. POSITION - FUS. STA.

LOAD ACCELERATION

g's

PREPARED BY RSA
DATE 4-20-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-58

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-16-65
FLIGHT 103 DROP NO. 10

SHEET 4 OF 7

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE D-10, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

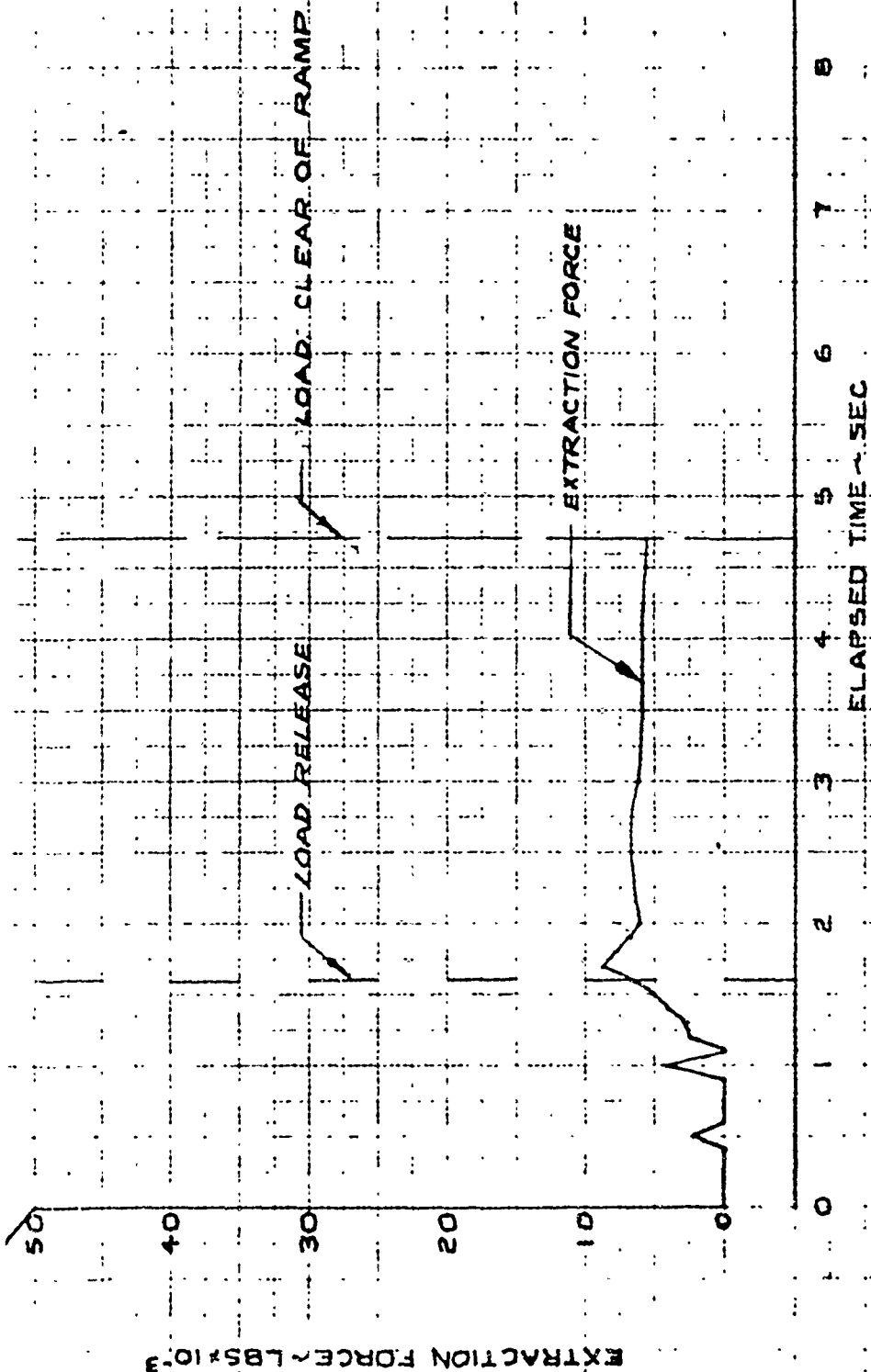
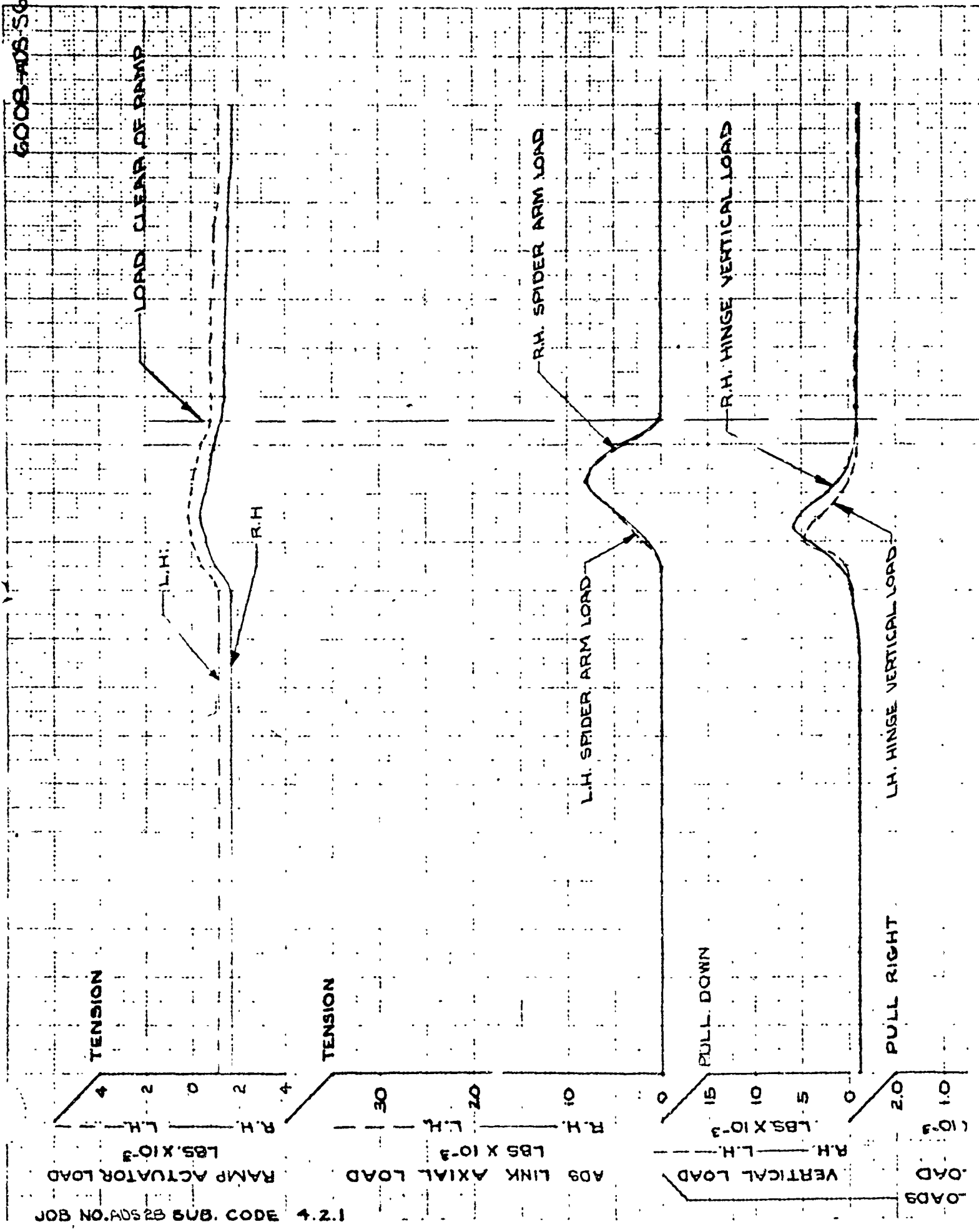


FIGURE D-10D

6008
ADS-56D
REVISED 5-4-65
760

6008 ADS 56 E



JOB NO. ADS 28 SUB. CODE 4.2.1

PREPARED BY: T.E.D.
DATE: 4-20-68
CHECKED BY: JUD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-59

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 14-6-68
FLIGHT 103 DROP NO. 10

SHEET 5 OF 7

CARGO WT 18,400 LBS

NOTE:
SEE FIGURE 10A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

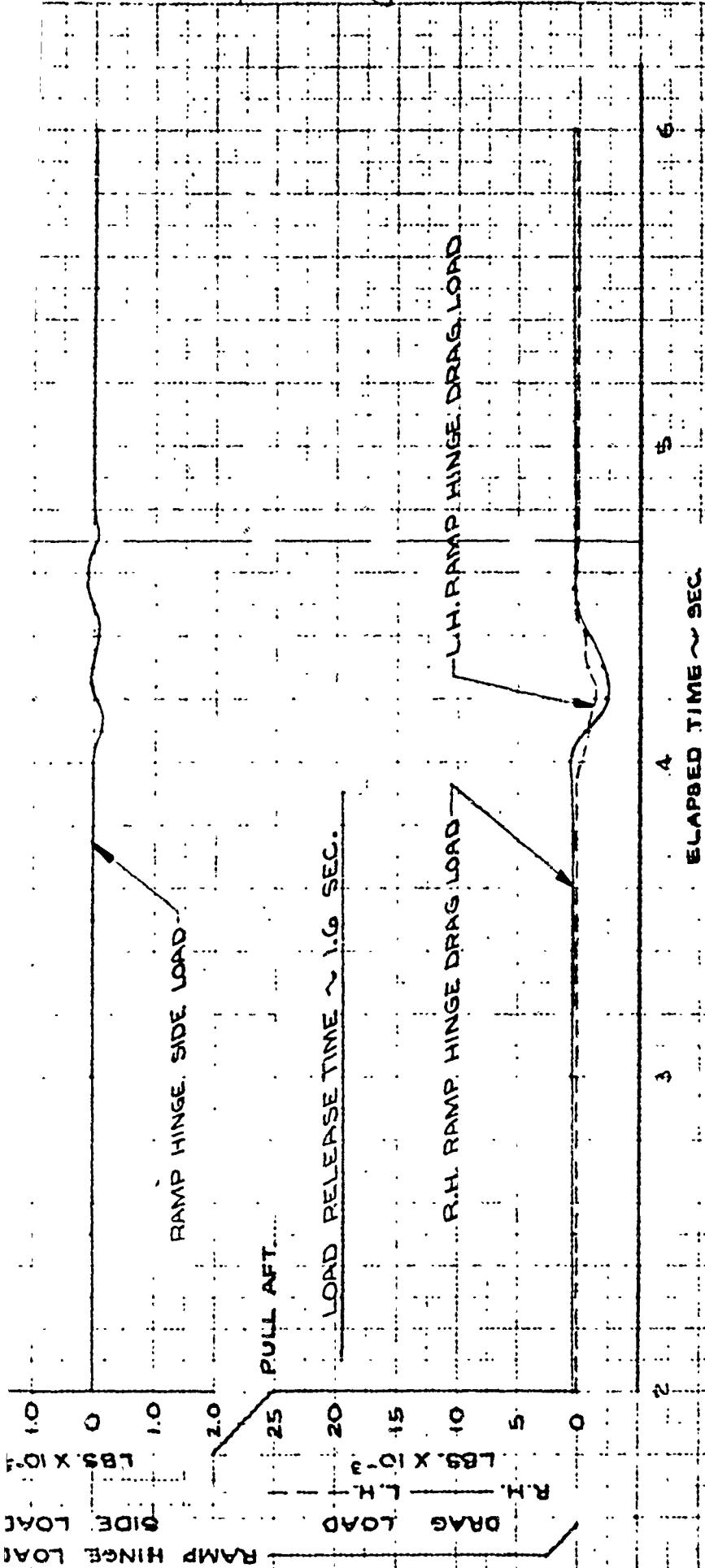


FIGURE 10E

6008
ADS-56E
REVISED 5-4-68
(11)

6008
ADS-56F

COMPRESSION

L.H. PETAL DOOR ACTUATOR

R.H. PETAL DOOR ACTUATOR

My 0 F.S. 1568

LOAD CLEAR OF RAMP

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10³
RH
LH

VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁶

DOWN LOAD

My 0 F.S. 1048

PREPARED BY TED
DATE 4-20-65
CHECKED BY JWD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-60

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-2077 LAC 6008
TEST DATE 4-16-65
FLIGHT 103 DROP NO 10
SHEET 6 OF 7
CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE D-10A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

MY 015.1048

LOAD RELEASE TIME ~ 1.6 SEC.

DOWN LOAD

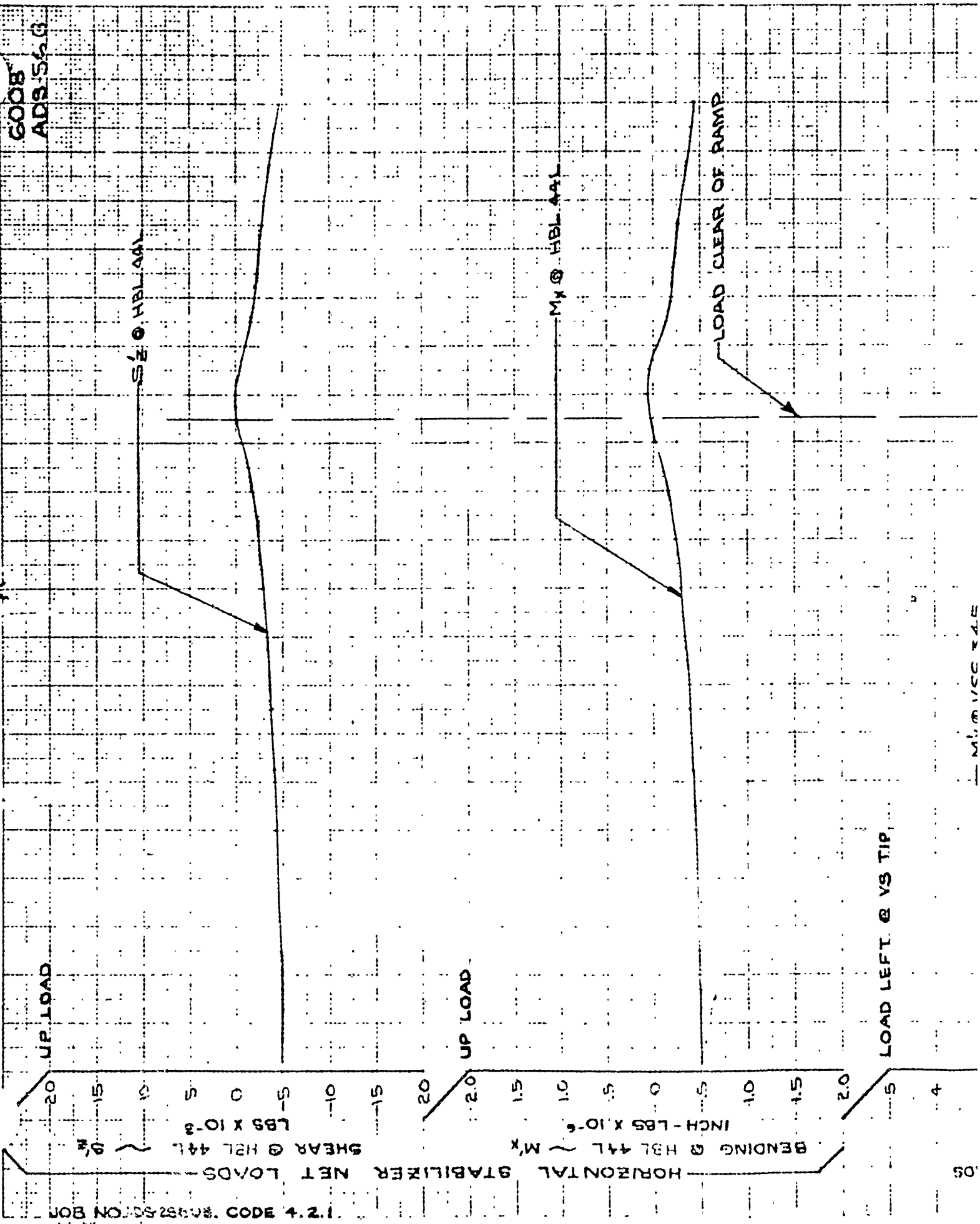
ELAPSED TIME ~ SEC.

FIGURE D-10F

VERTICAL BENDING ~ FS. 1048
INCH-LBS. X 10⁻⁶

6008
ADS-56F
REVISED 5-4-65
JWD

6008
AD3563



PREPARED BY TED

DATE: 4-20-65

CHECKED BY: [Signature]

REF ID: ER 3473

MODEL: C-141A

PAGE: D-61

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 4-16-65

FLIGHT 103

DROP NO. 10

SHEET 1 OF 1

CARGO WT. 18,400 LBS

NOTE:
SEE FIGURE 2-10A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD RELEASE TIME ~ 1.6 SEC.

M_x @ VSS 345

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M_x
~ INCH-LBS X 10⁻⁶

FIGURE 2-2 G

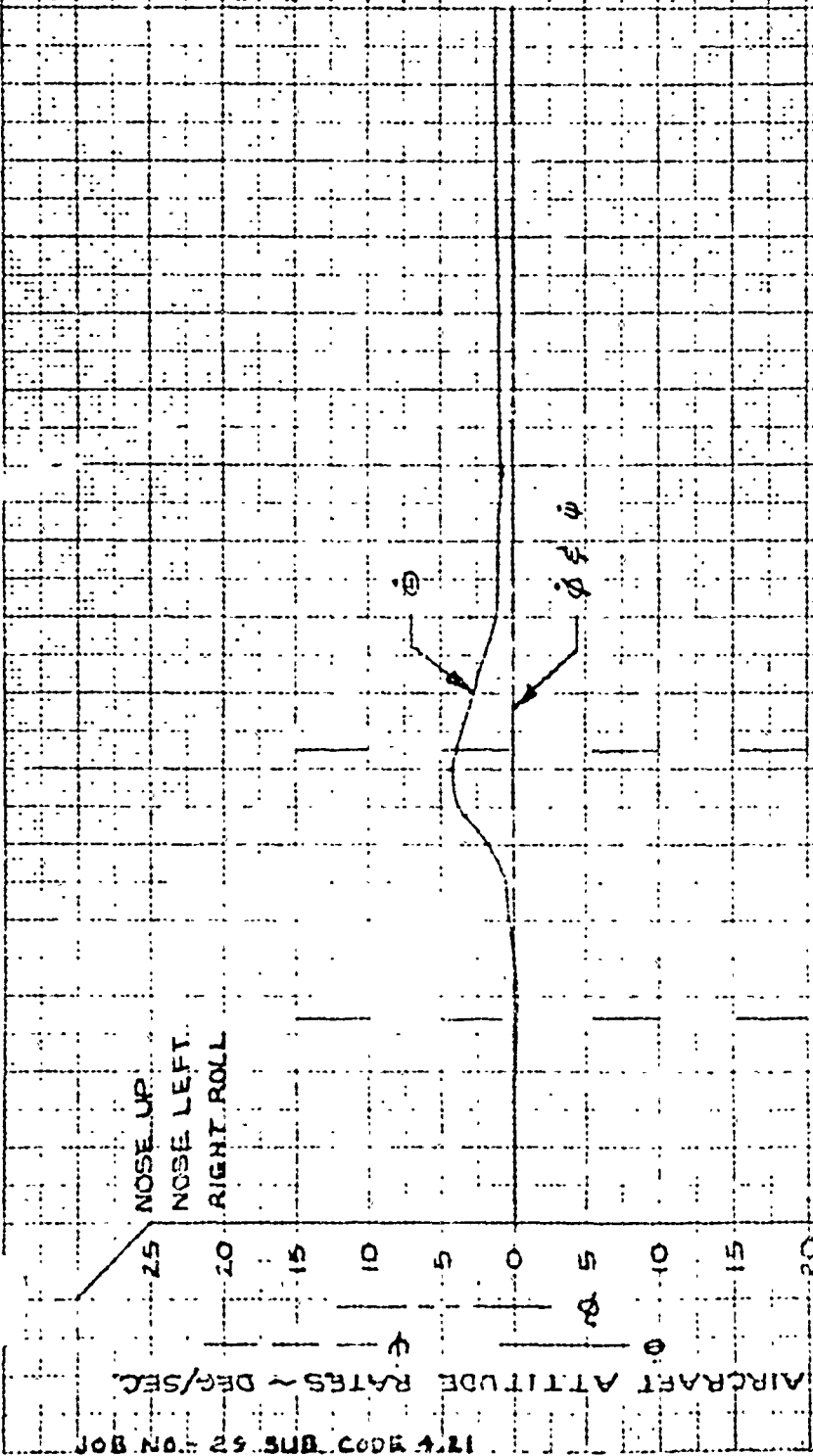
6008

ADS-56 G

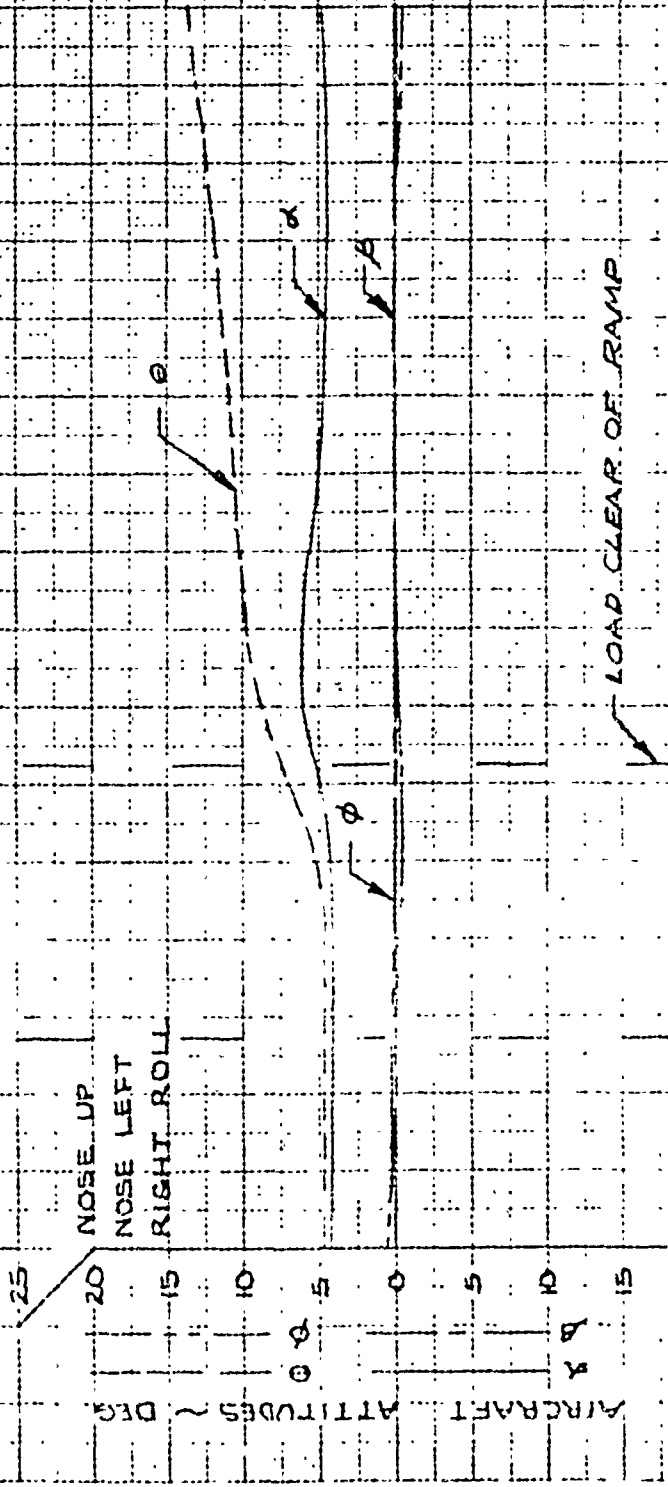
REVISED 5-4-65

FW

6008
AD557A



JOB NO. 1743003 BUN 52 SUB CODE 4.21



LOAD CLEAR OF RAMP

PREPARED BY **RSA**
 DATE **4-21-65**
 CHECKED BY **JWA**

EXPERIMENTAL DATA COMPANY
 A TECHNICAL SERVICE AND DATA CORPORATION

REPORT NO. **ER 5473**

MODEL **C-141A**

PAGE **D-62**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF838077 **LAC 6008**

TEST DATE **4-20-65**

FLIGHT JOB **DROP NO. 11**

SHEET **1** OF **7**

CARGO WT. 21,900 LBS

RUN CONDITIONS

1. G.W. ~ 184,200 LBS
2. C.G. PRIOR TO DROP ~ 26.4 % MAC
3. C.G. AFTER DROP ~ 30.0 % MAC
4. FLAPS ~ 33%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 (4 ENGINES)
7. α ~ 1.7 DEG. (AC N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 16 FT.
3. CARGO C.G. POSITIONS
LONG. ~ FS 858
VERT. ~ WL 173

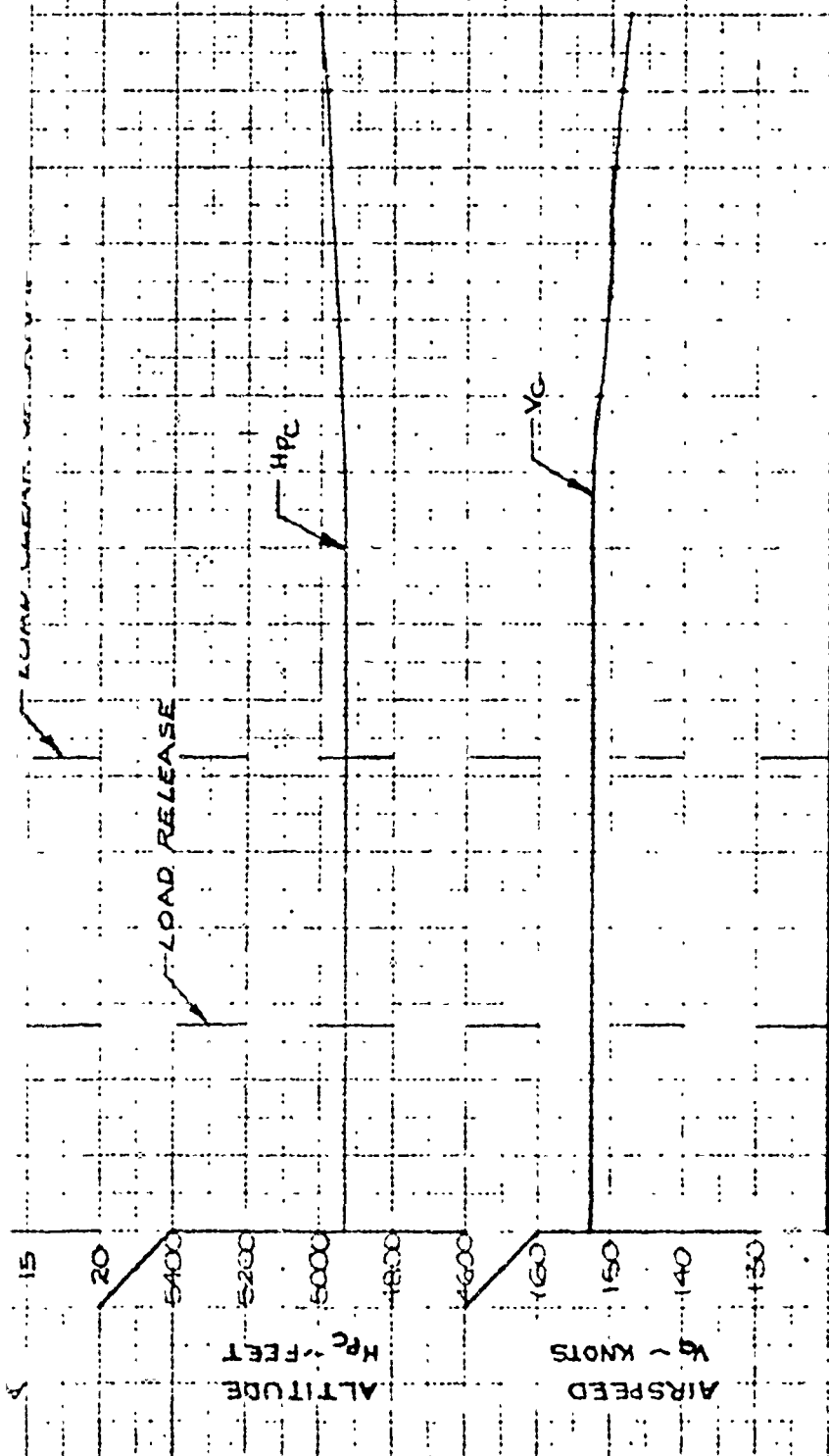
EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 23 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.07
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE **D-11A**

6008
ADS 57A

REVISED
12-14-65
MEN



ADS 57B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

CONTROL FORCES ~ LBS.

12-4 3003 BNS 62-NO 608

$F_e, F_a, \& F_r$

T.E. UP

20
15
10
5
0
5
10

EFT ALLEPON POSITION ~ DEG

δ_{al}

RSA
7-21-65
CHECKED BY *fu*

LOCKHEED COMPANY
RESEARCH AND DEVELOPMENT

ER 5473
MODEL C-141A
D-63

63

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 4-20-65
FLIGHT 108 DROP NO. 11
SHEET 2 OF 7
CARGO WT. 21,900 LBS.

NOTE:
SEE FIGURE D-11 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

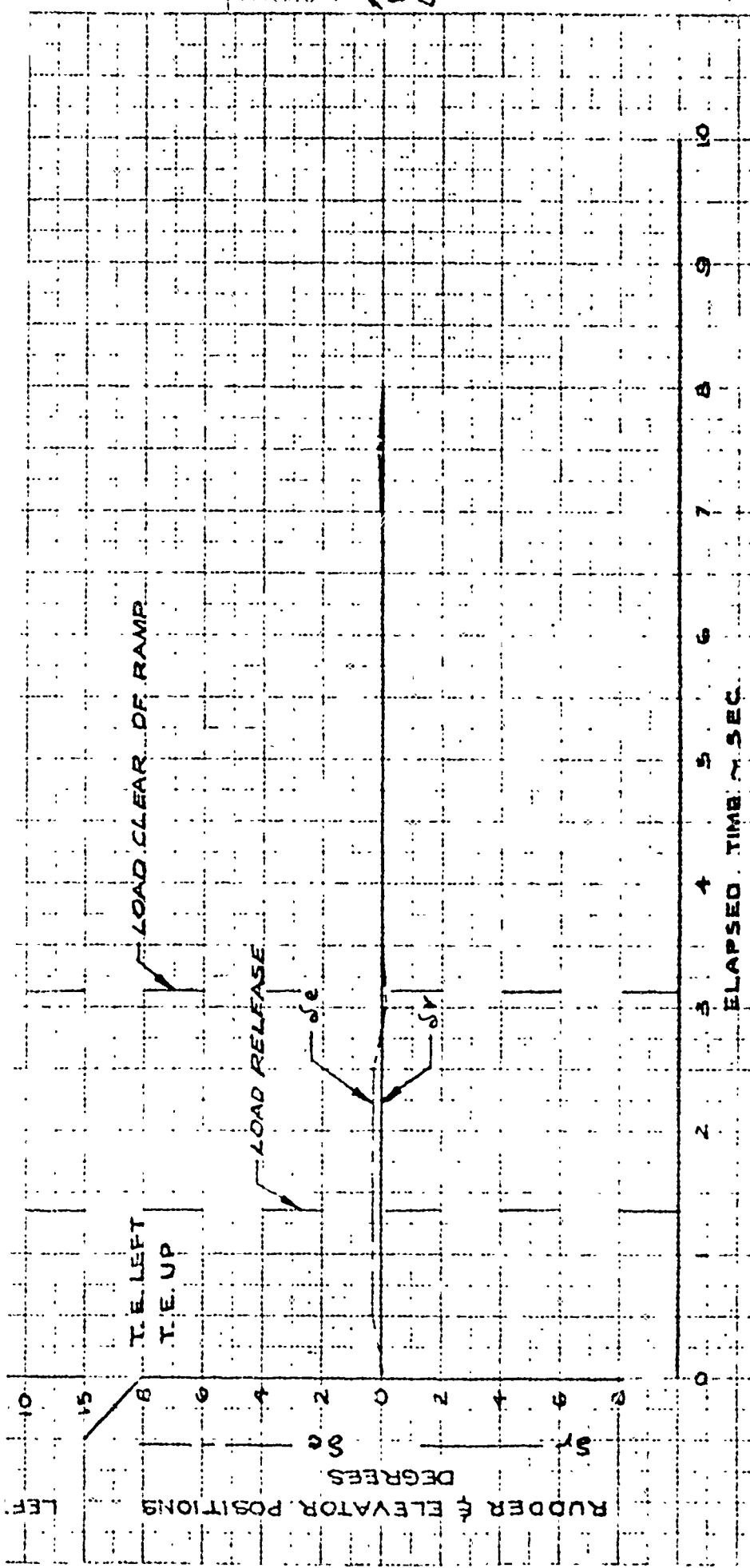


FIGURE D-13

6008
ADS 57.6

6008
ADS-57C

(1)

JOB NO. ADS 2) SUB. CODE 4 2.1

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

0

NOTE:

0 CALCULATED FROM N_z DATA

UP ACCEL.

ACCELERATIONS ~ g

LOAD RELEASE - LOAD CLEAR OF RAMP

N# QFS 1637

N# QFS 5932 (G)

PREPARED BY: TED
 DATE: 4-21-65
 CHECKED BY: [Signature]

LOCKHEED-GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-64

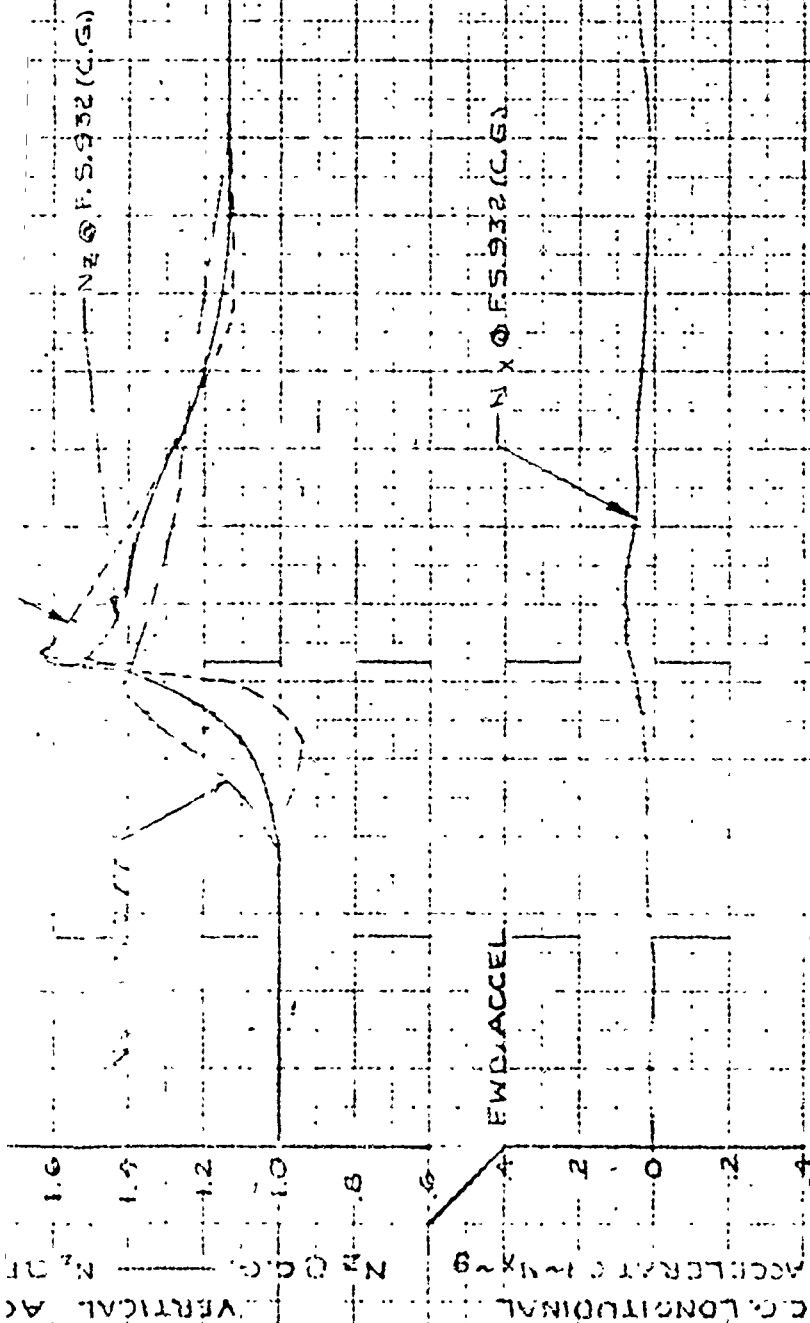
TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AF 63-8077 LAC 6008
 TEST DATE: 4-20-65
 FLIGHT 103 DROP NO. 11

SHEET 3 OF 7

CARGO WT. 21,000

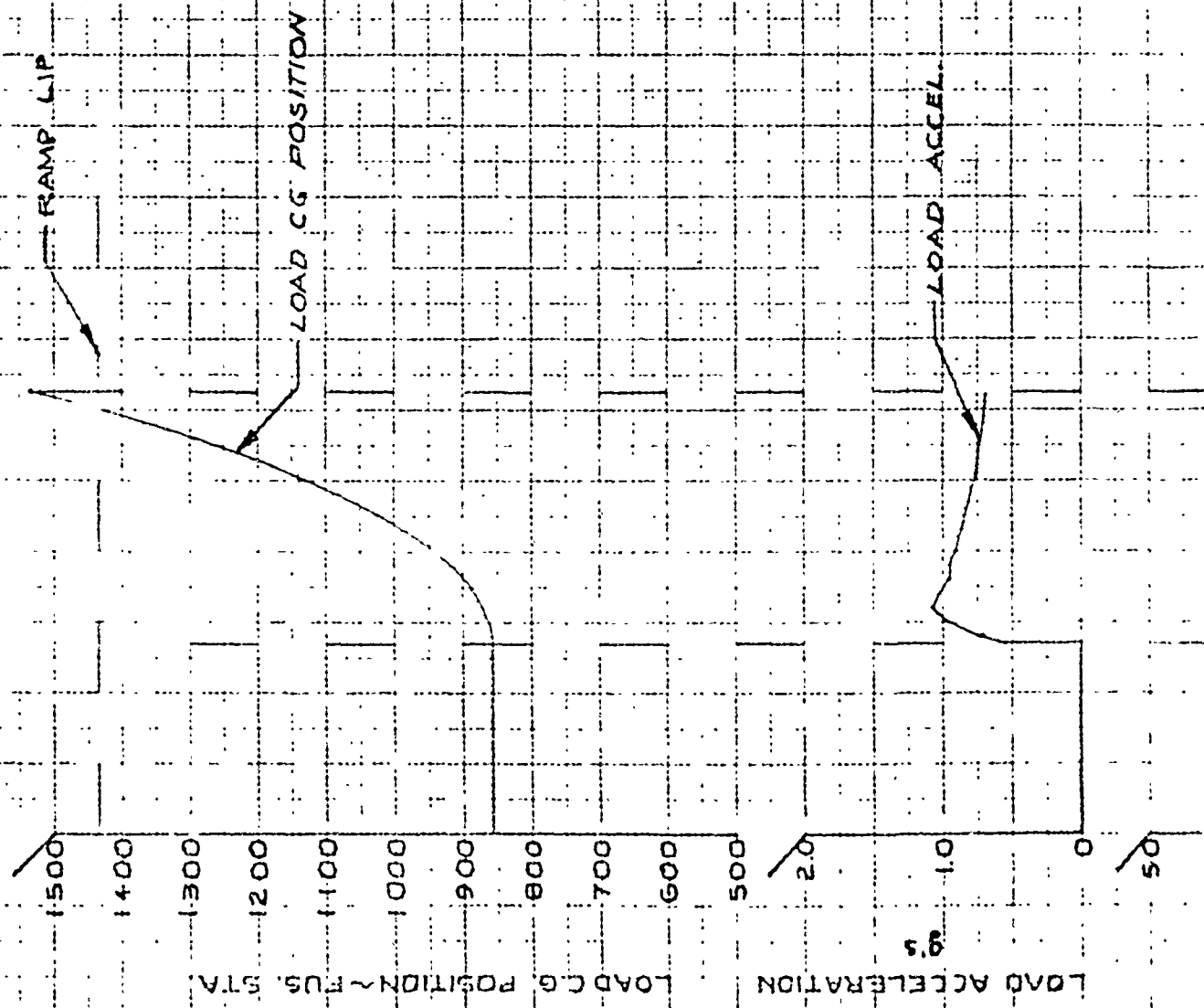
NOTE:
 SEE FIGURE 1 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTENSION
 CHUTE DESCRIPTION.



6008
 ADS

61008
AD857D

JOB NO - 49 SUB CODE 42



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

PREPARED BY **RSA**
DATE **4-21-65**
CHK. BY **[Signature]**

APPROVED BY **[Signature]**
A DIVISION OF **[Signature]**

REPORT NO. **PR 5475**
MODEL **C-11A**
PAGE **D-65**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-11A**
AF 63-8077 LAC 6008
TEST DATE **4-20-65**
FLIGHT 108 DROP NO. 11

SHEET **4** OF **7**

CARGO WT. **21,900 LBS.**

NOTE:
SEE FIGURE **D-1A**, SHEET **1** OF **7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

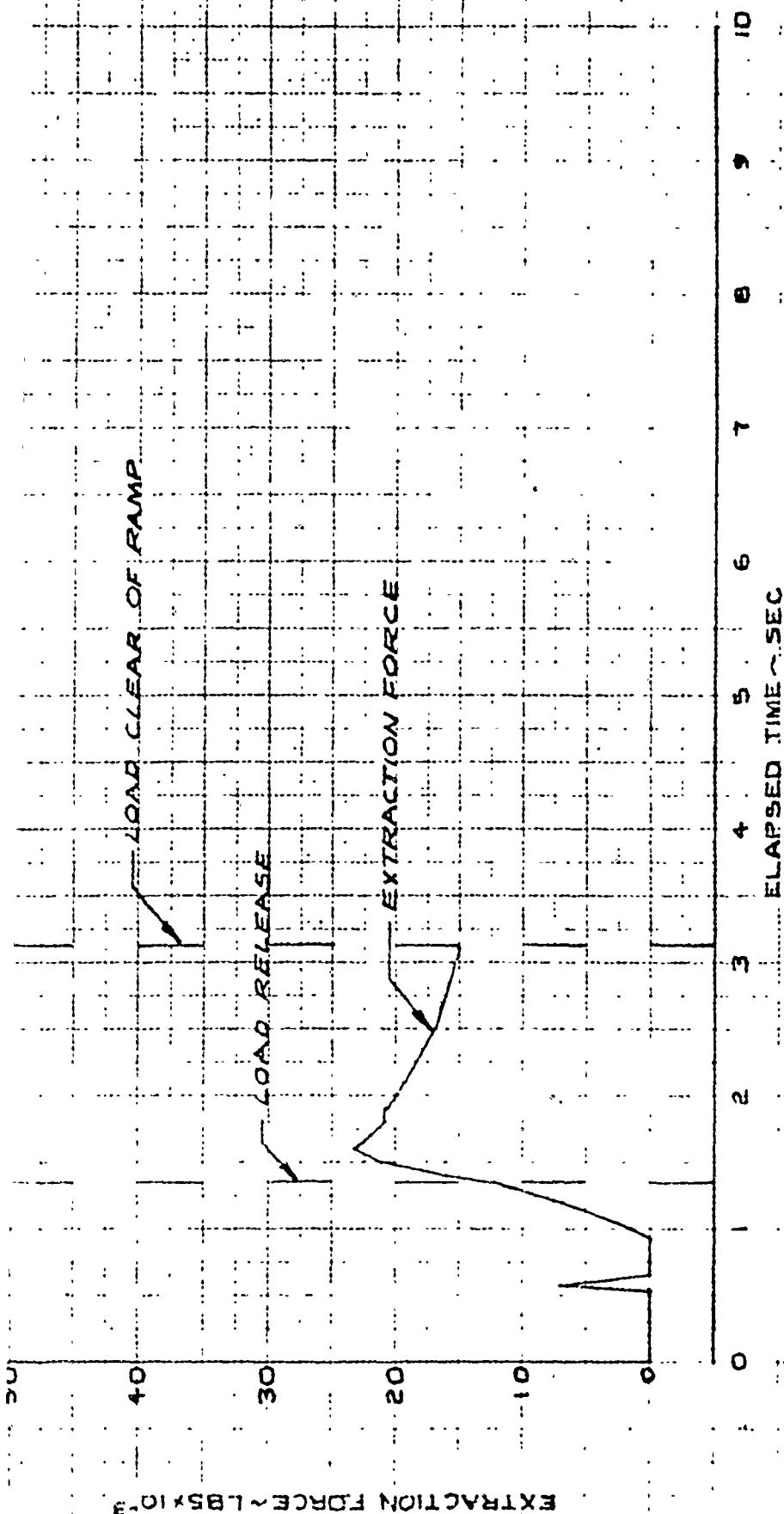
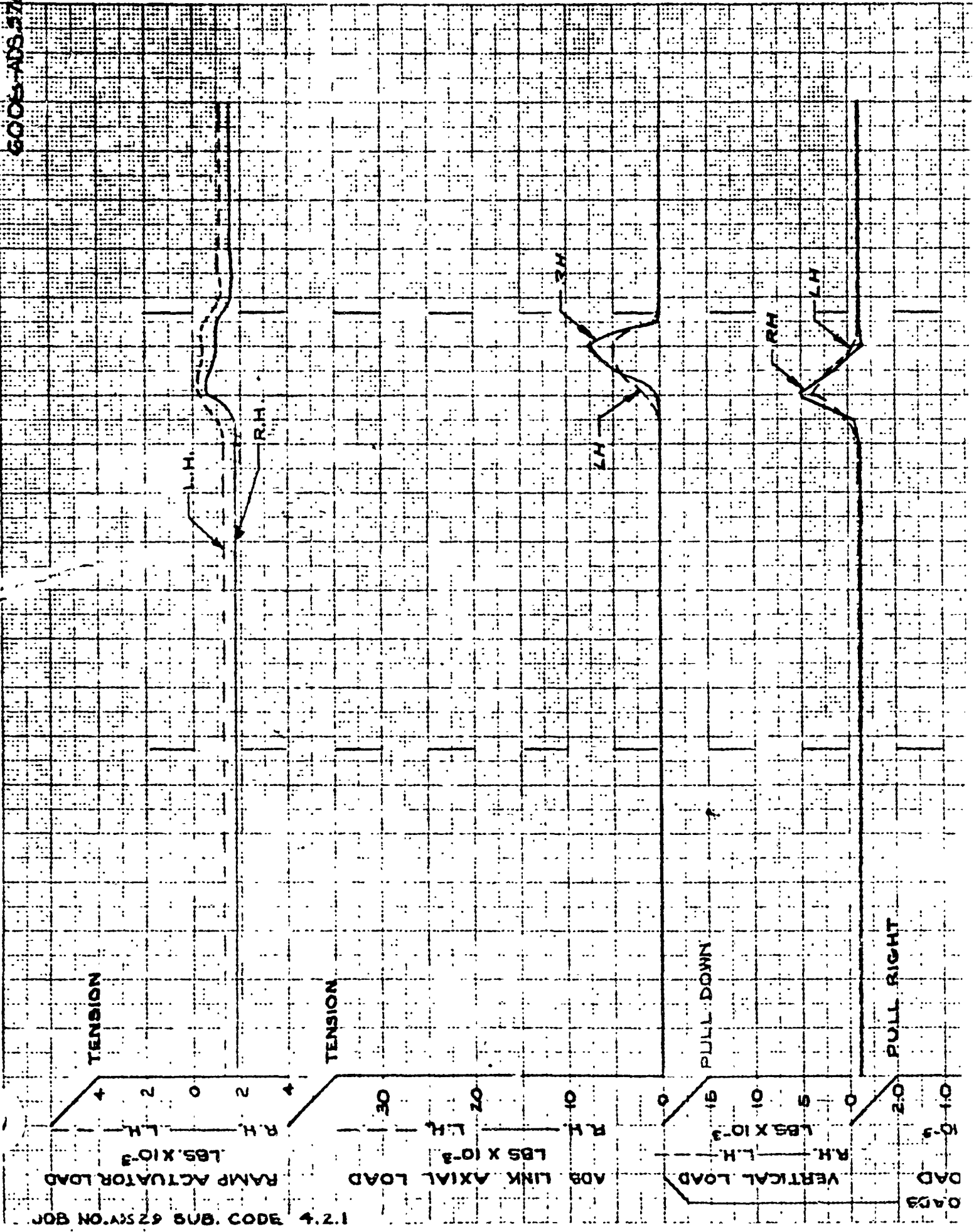


FIGURE **D-11D**

6008
ADS 57 D

6005-ADS-37E



JOB NO. 62529 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD

ADS LINK AXIAL LOAD

VERTICAL LOAD

PULL RIGHT

PREPARED BY RSA
DATE 4-22-65
CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AERONAUTICAL CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-66

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AE 63-8077

LAC 6008

TEST DATE: 4-20-65

FLIGHT JOB

DROP NO. 11

SHEET 5 OF 7

CARGO WT. 21,900 LBS.

NOTE:
SEE FIGURE D-11A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

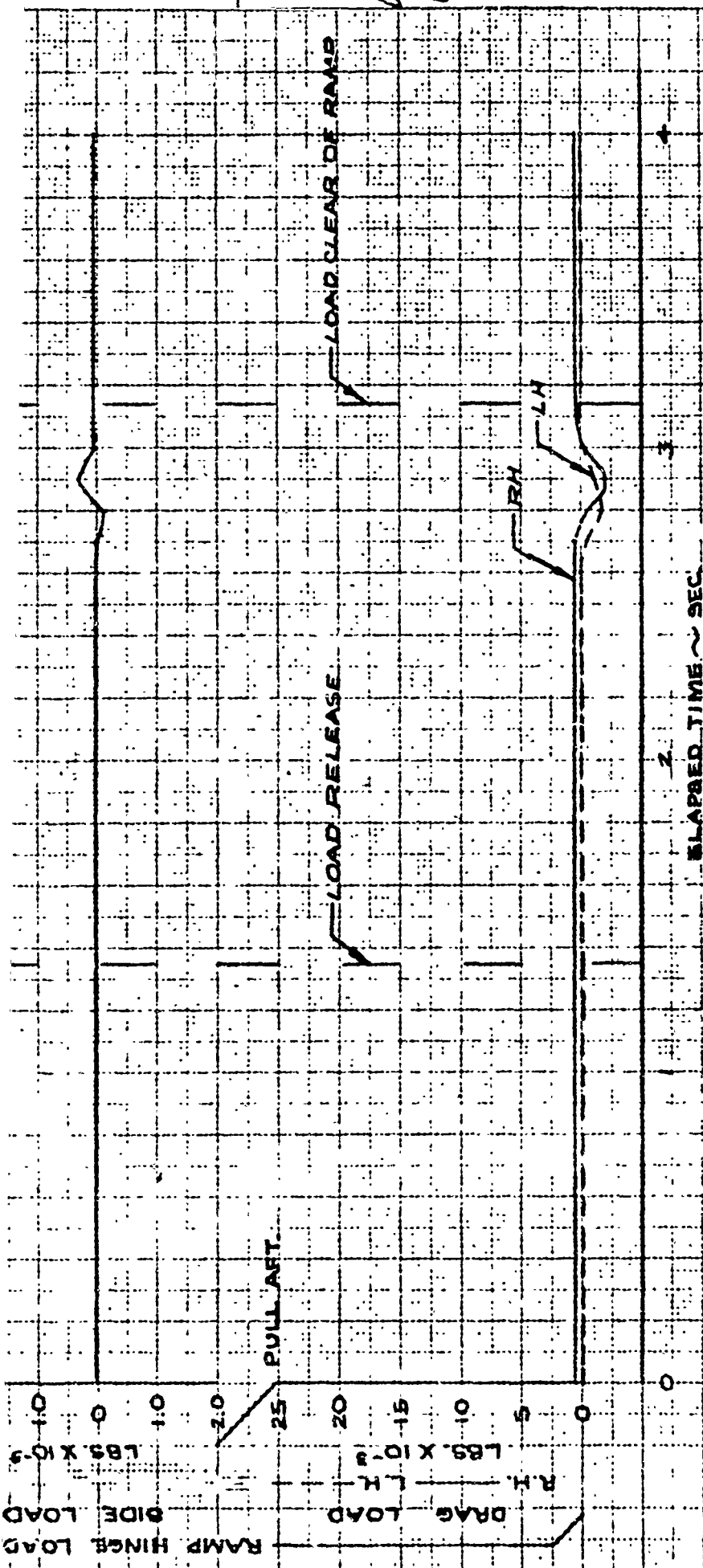
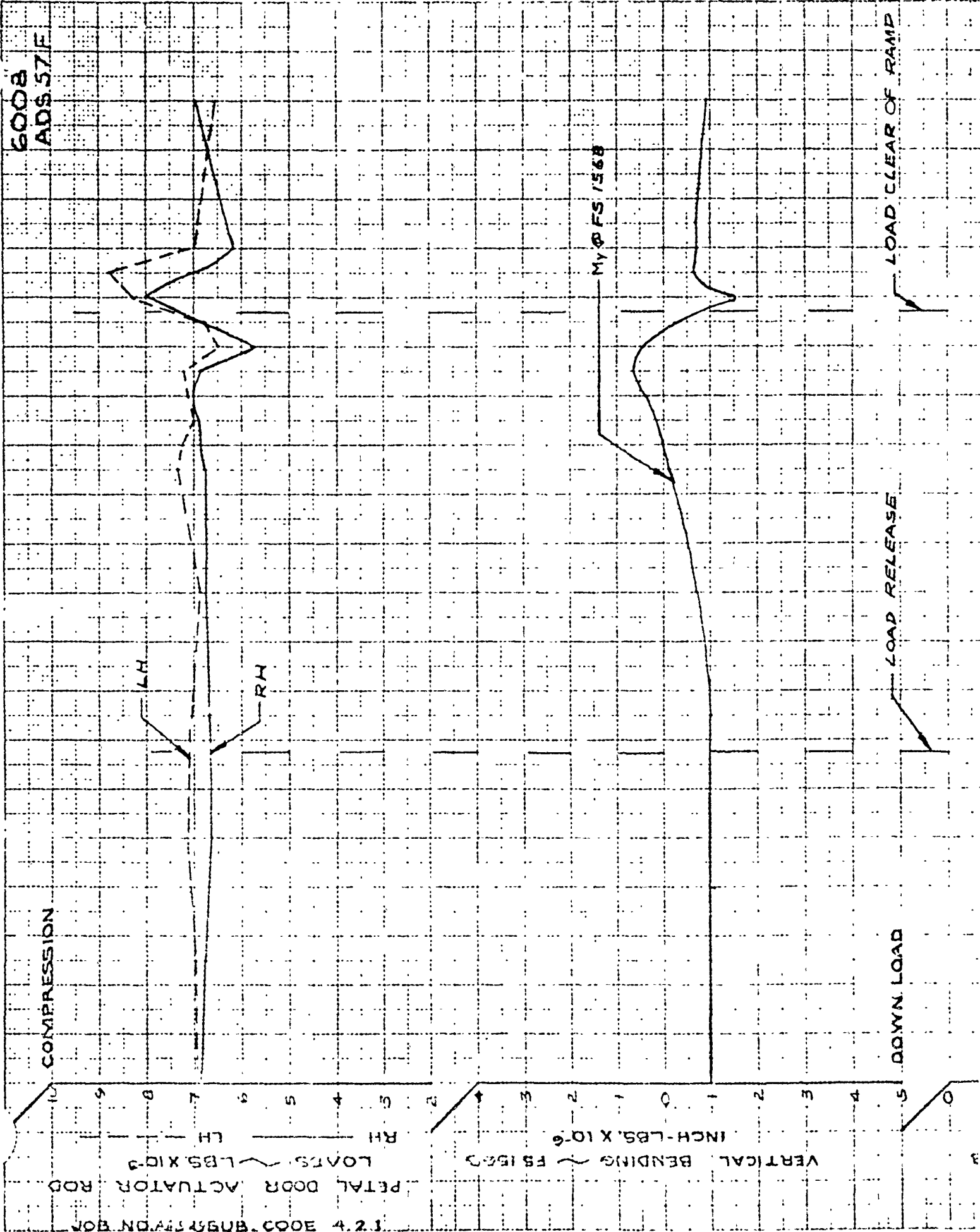


FIGURE D-11E

6008
ADS-57E



PREPARED BY **ESA**
 DATE **4-22-65**
 CHECKED BY **ADG**

L. CHNEED GEORGIA COMPANY
 AIRCRAFT DELIVERY CORPORATION

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-67**

**TIME HISTORY OF AERIAL DELIVERY
 MANEUVER**

MODEL **C-141A**
AF63-B077 LAC **6008**
 TEST DATE **4-20-65**
 FLIGHT **108** DROP NO. **11**
 SHEET **6** OF **7**
CARGO WT. 21,900 LBS

NOTE:
 SEE FIGURE 11 AS SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION AND EXTRACTION
 CHUTE DESCRIPTION.

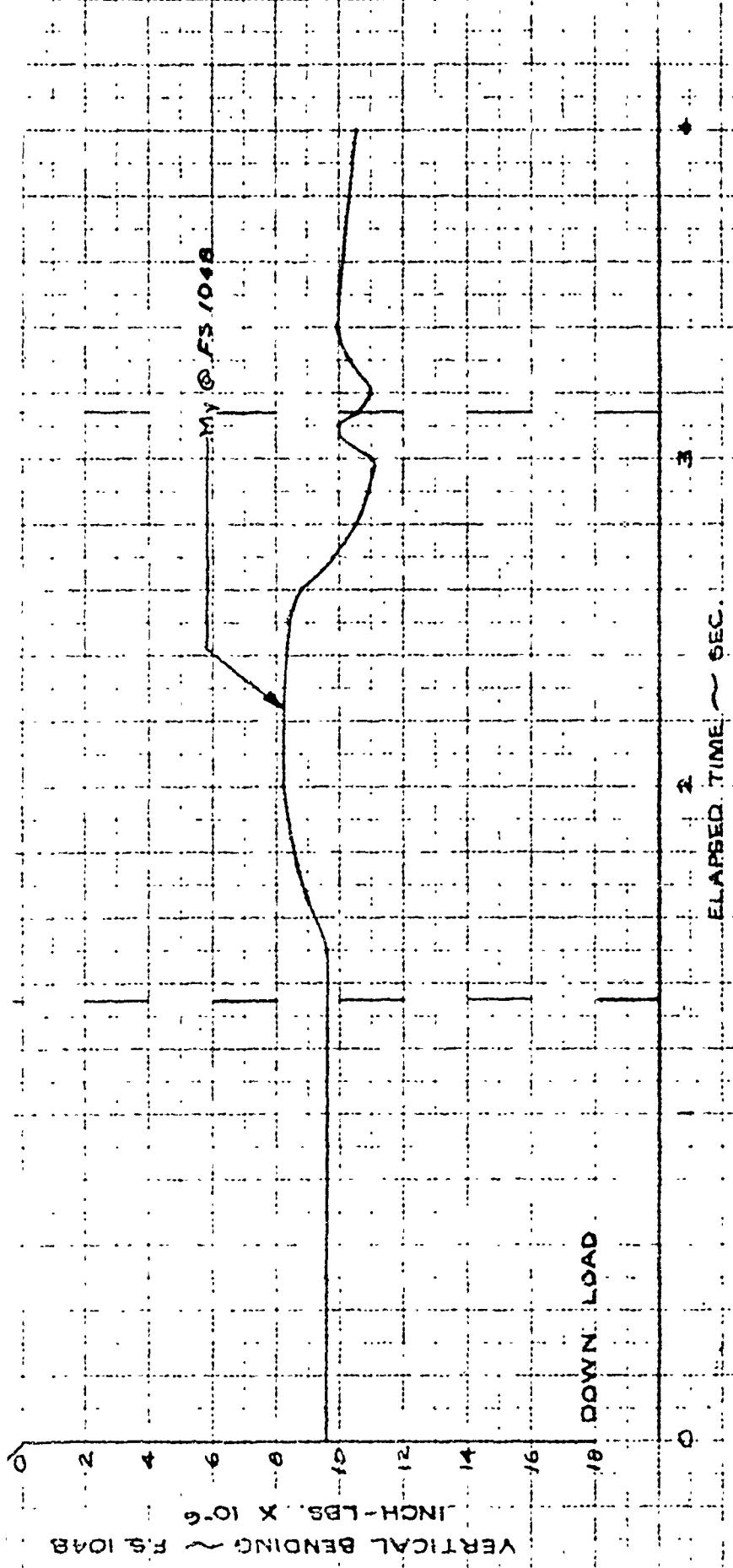


FIGURE D-1 F

6008
ADS 57 F

6008
AD9576

UP LOAD

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

LOAD RELEASE

LOAD CLEAR OF RAMP

NET LOADS

BENDING @ HBL 44L ~ M'x

SHEAR @ HBL 44L ~ S'z

INCH - LBS X 10⁻⁶

LBS X 10⁻³

6' @ HBL 44L

M'x @ HBL 44L

WELDON

92 ~ SHEAR @ HALL 44L
LBS X 10-3

五、四、三、二、一

JOB NO. A33 243UB. CODE 4.2.1

up: LOAD

BENDING @ 447 447 ~ M'X
INCH - LBS X 10⁻⁶

W. 23 HBL 441

LOAD LEFT @ Y3 TIP

-LOAD RELEASE

LOAD CLEAR OF RAMP

PREPARED BY RSA
DATE 4-22-65
BY JLP

UNITED GEOMETRIC COMPANY
AERIAL DELIVERY EQUIPMENT DIVISION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-68

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 4-20-65

FLIGHT 108

DROP NO. 11

SHEET 7 OF 7

CARGO WT. 21900 LBS

NOTE:
SEE FIGURE D-11A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

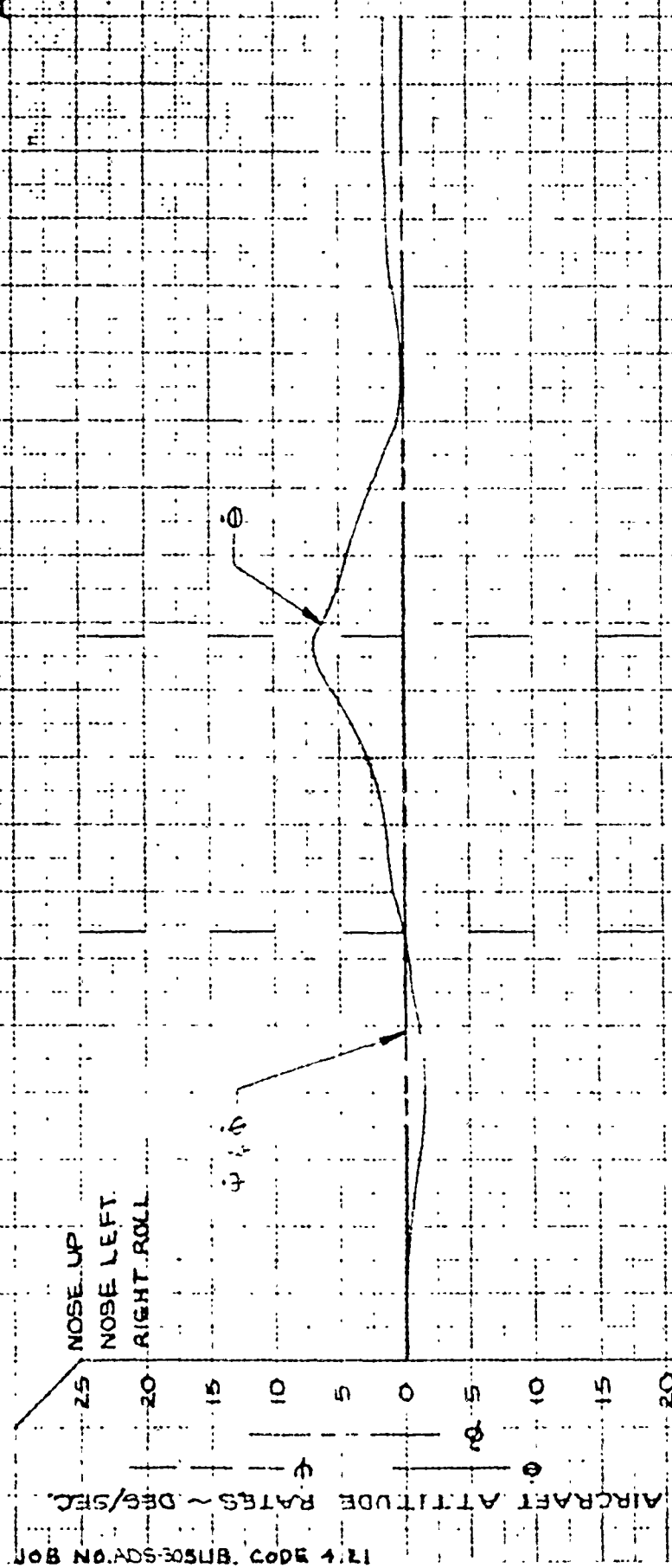
MIX @ VS9 345

VERTICAL STABILIZER NET LOADS
BENDING @ VS9 345 ~ MIX
~ INCH-LBS X 10⁻⁶

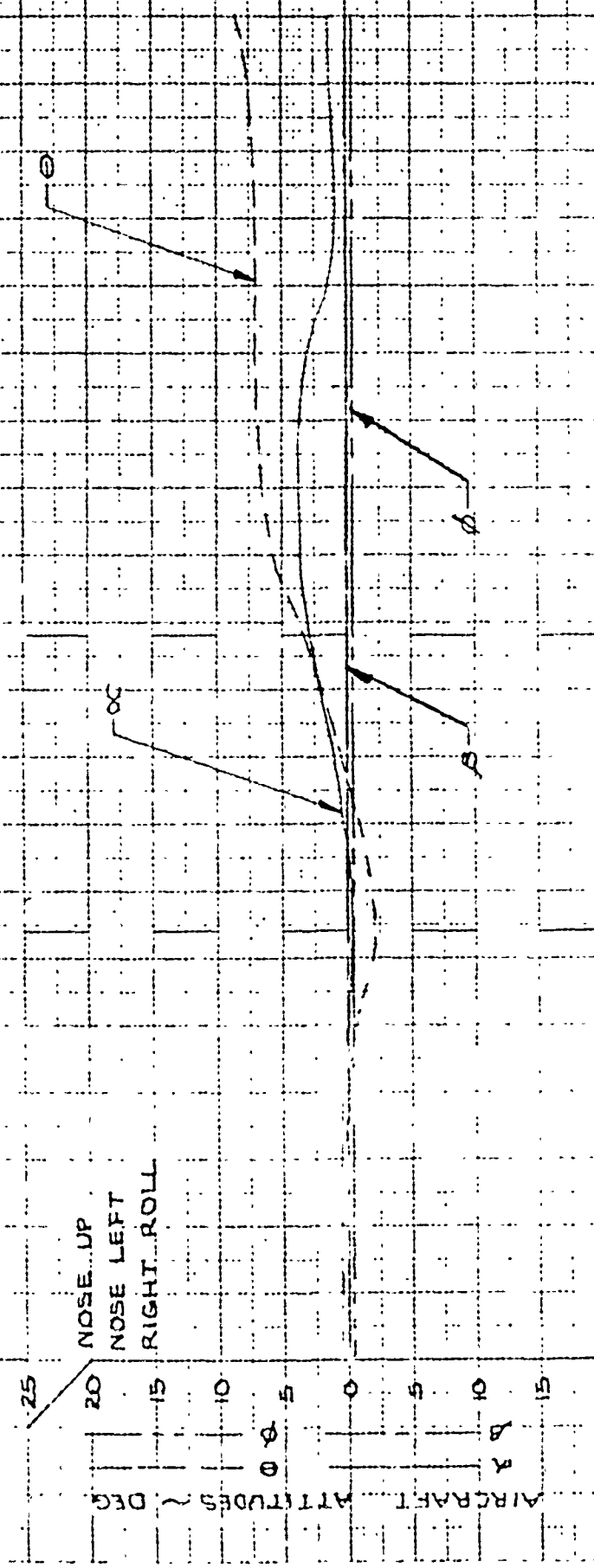
FIGURE D-15

6008
ADS 5T G

6008
ADS-58A



JOB NO. ADS-305 LIB. CODE 4.71



PREPARED BY **TED**
 DATE **4-21-65**
 CHECKED BY **ful**

LOCKHEED GEORGIA COMPANY

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **D-69**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077 LAC 6008

TEST DATE 4-21-65

FLIGHT VII DROP NO. 12

SHEET 1 OF 5

CARGO WT 23,830 LBS

FLY CONDITIONS

1. G. W. ~ 181,050
2. C. G. PRIOR TO DROP ~ 26.39% MAC
3. C. G. AFTER DROP ~ 29.9 % MAC
4. FLAPS ~ 61%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. α ~ 1.5° (A/C NU.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3.866
 VERT. ~ WL 173

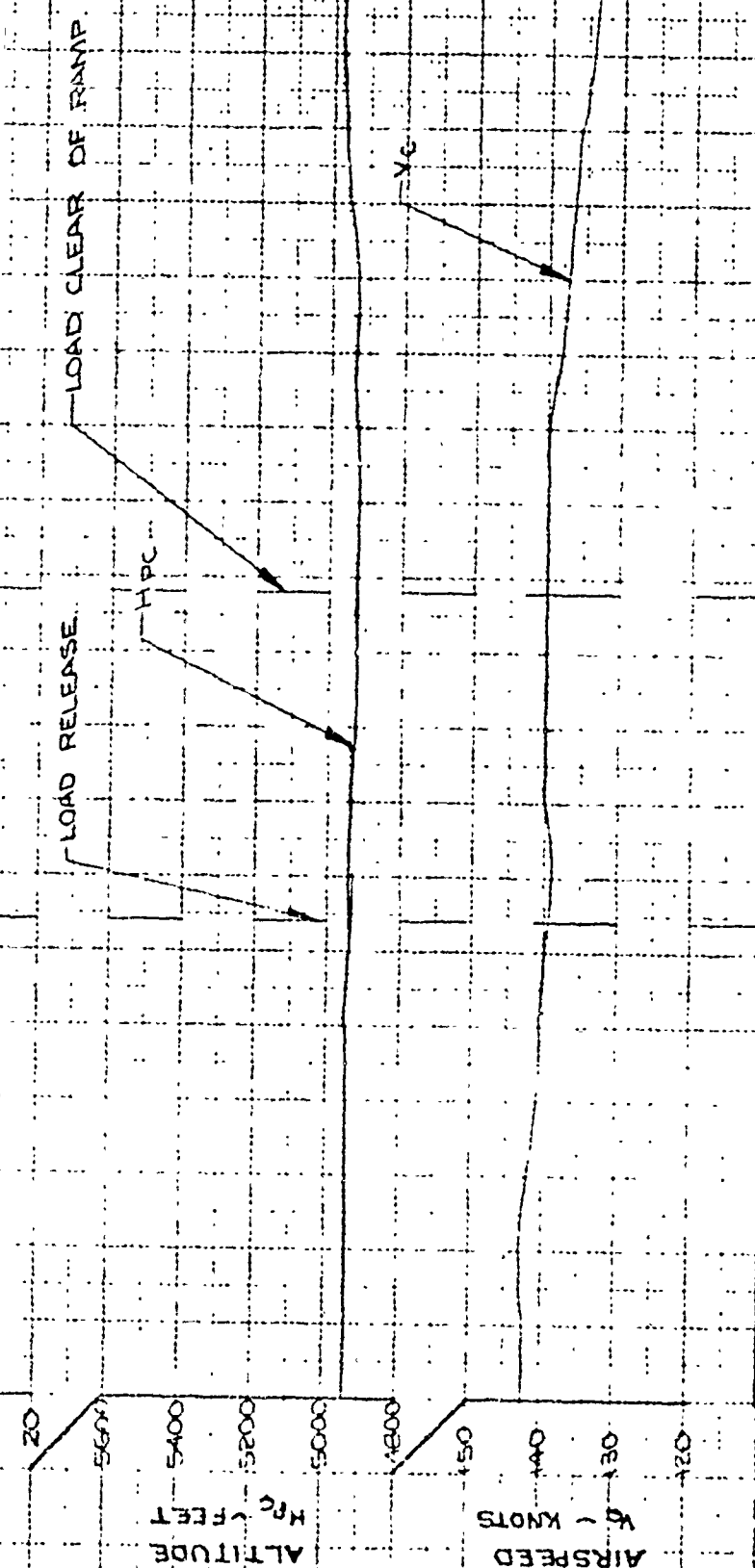
EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 22"
3. RATED CHUTE FORCE/CHRGD WT. ~ 100
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE D-2A

**6008
 ADG-58A**

REVISED
 12-14-65
 MBH



6008
ADS-538B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

CONTROL FORCES ~ LBS.

JOB NO.

SUB. CODE 4.21

F_x

F_y

F_z

T.E. UP

20
15
10
5
0

S_{AL}

LOAD RELEASE

LOAD CLEAR OF RAMP

EFT AILERON POSITION ~ DEG.

30
20
10
0
-10

TESTED
4-21-65
[Signature]

REPORT NO. ER 5473
MODEL C-141A
PAGE D-70

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 4-21-65
FLIGHT VIII DROP NO. 12
SHEET 2 OF 3
CARGO WT. 23,830 LBS

NOTE:
SEE FIGURE 2-12 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

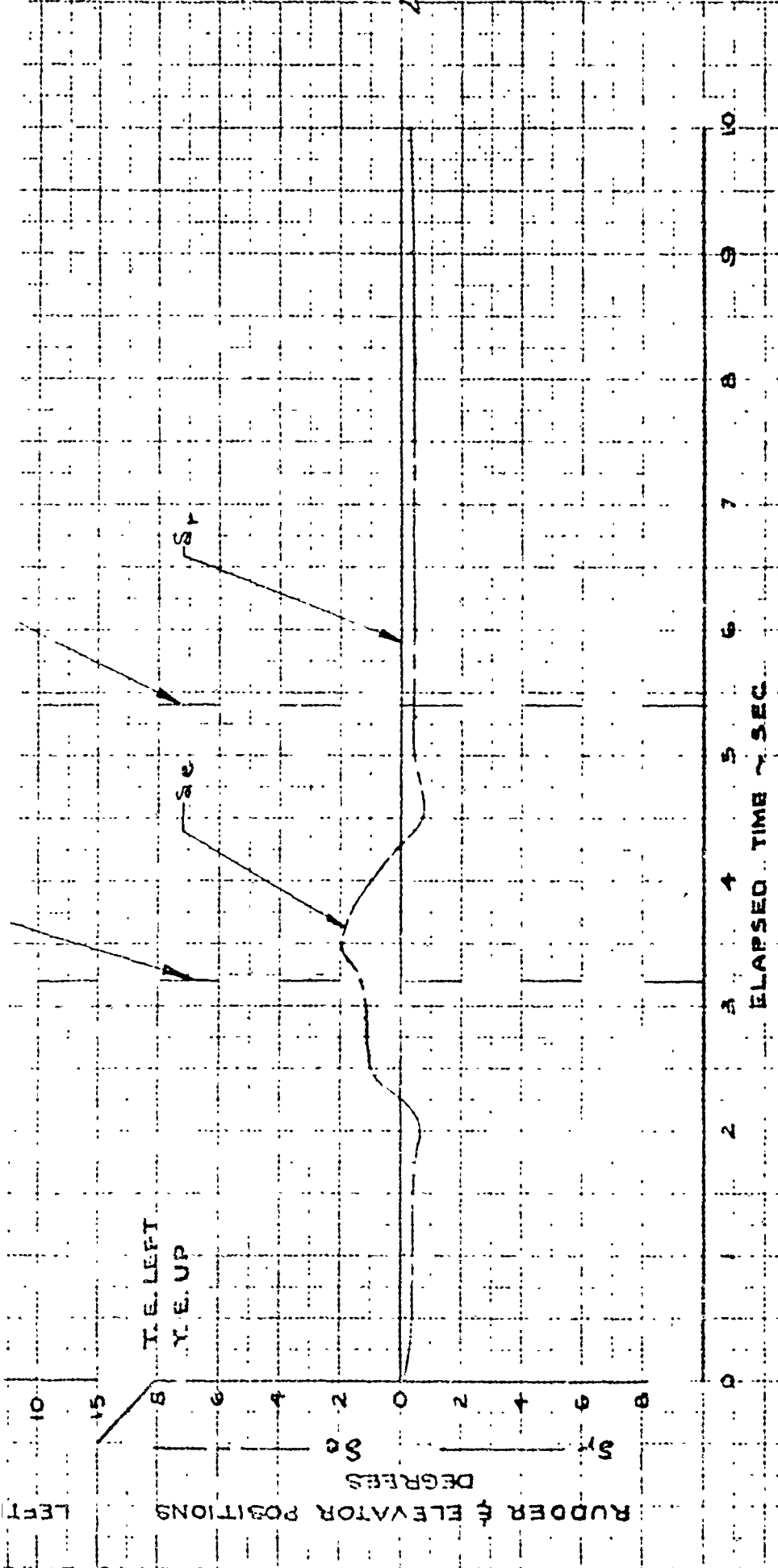


FIGURE 2-23

6008
ADS-58B

6008
AD8-58C

JOB NO. AD8-305 SUB. CODE 4.2.1

NOSE UP

PITCHING ACCELERATION

DEG/SEC

UP ACCEL.

LOAD RELEASE

LOAD CLEAR OF BAMP

NOTE:
θ CALCULATED FROM N₂ DATA

ACCELERATIONS ~ 9

N₂ FS 1637

N₂ FS 277

N₂ @ FS. 1637

N₂ @ FS. 932 (C.G.)

N₂ @ FS. 277

PREPARED BY **TED**
 DATE **4-5-65**
 CHECKED BY *[Signature]*

ER 5473
 C-142A
 D-72

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C141A**
 AFG3-B077 LAC 6008
 TEST DATE: **4-21-65**
 FLIGHT ~ **III** DROP NO ~ **12**

SHEET **3** OF **5**

CARGO WT. 23,830 LBS

NOTE:
 SEE FIGURE **D-12A** SHEET **1** OF **4**
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

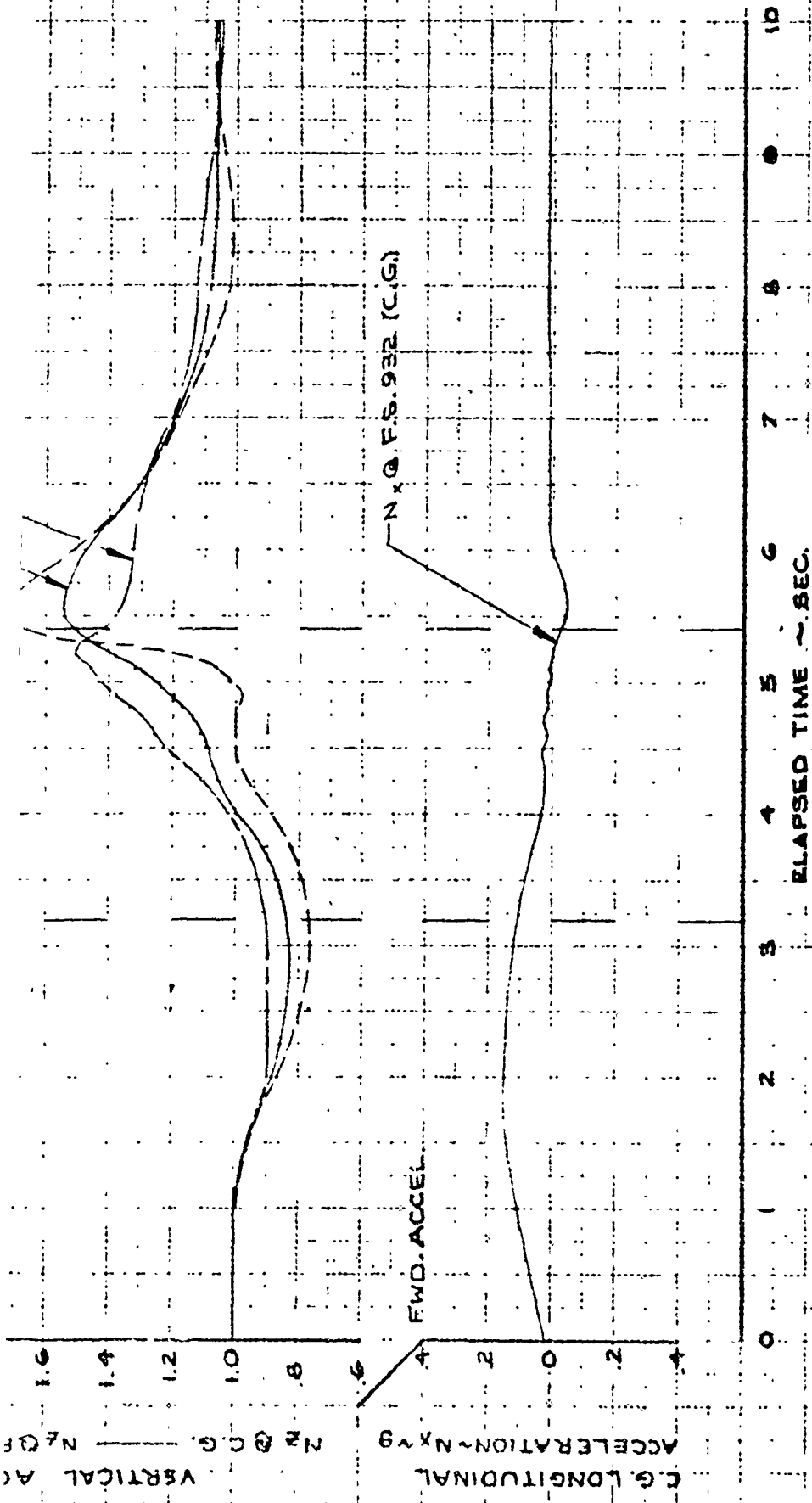
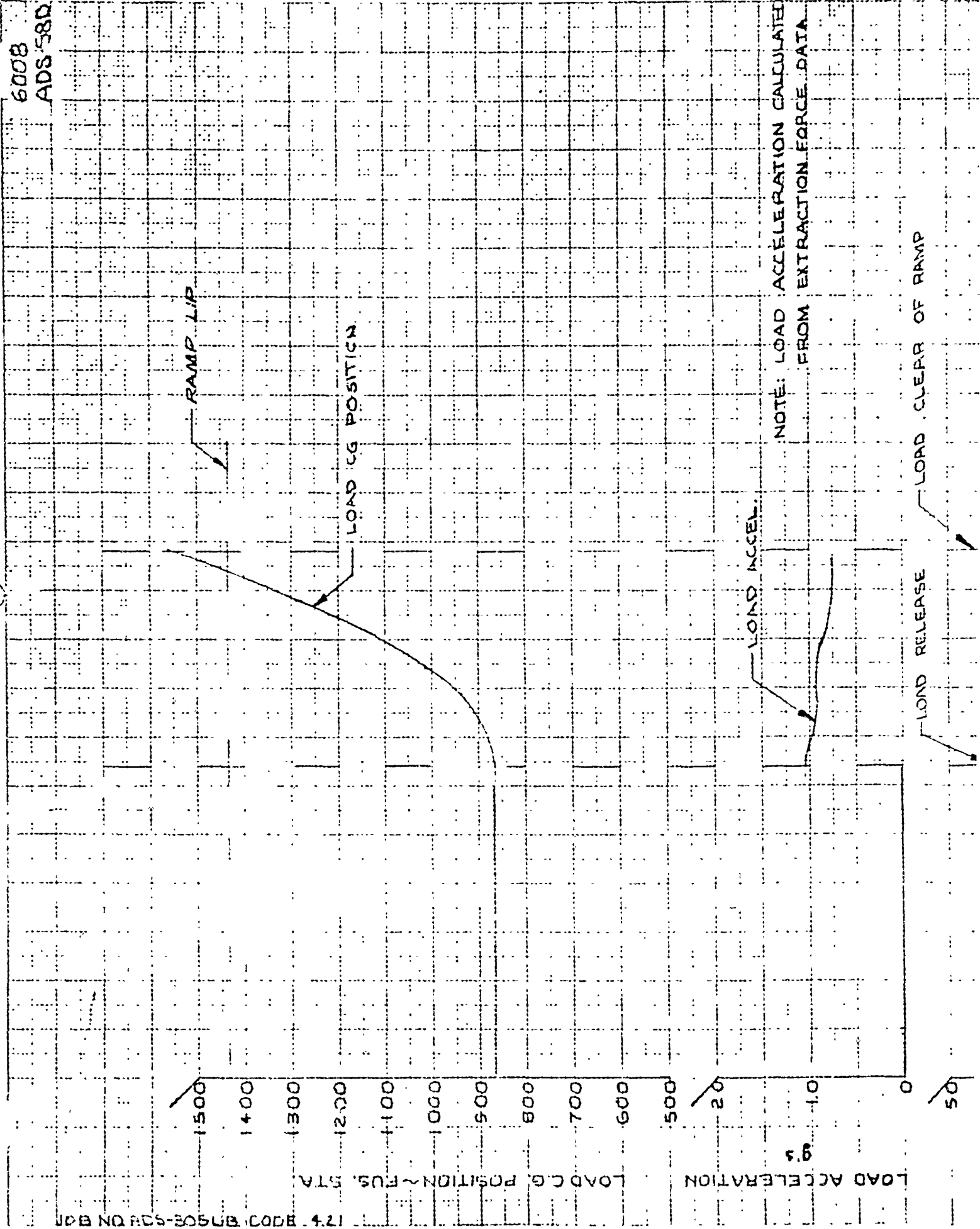


FIGURE D-12C

6008
 ADS-55C

6008
ADS-58D



PREPARED BY TED
DATE 4-21-65
CHECKED BY JWD

REPORT NO ER 5473
MODEL C-141A
PAGE 2-72

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-21-65
FLIGHT III DROP NO. 12

SHEET 4 OF 5

CARGO WT. 23,830 LBS

NOTE:
SEE FIGURE 12A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

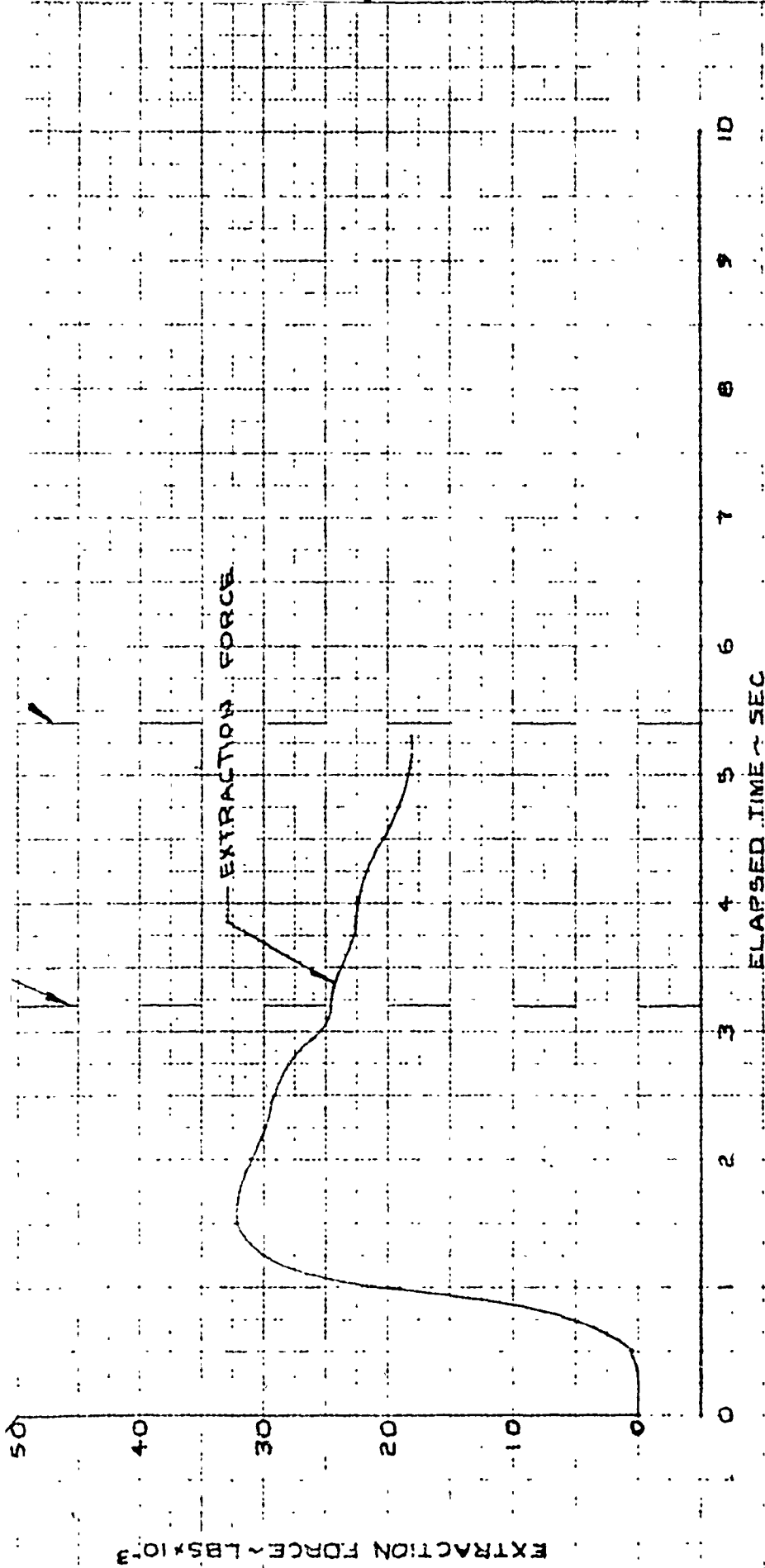


FIGURE 12-D

6008
ADS-58D

ADS-58E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM
Checked			TITLE			D-73
Approved						Model C-141A
						Report No ER 5473

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008

FLIGHT III TEST DATE 4-21-65

G.W. 181,100 LBS. A/S 140 KCAS

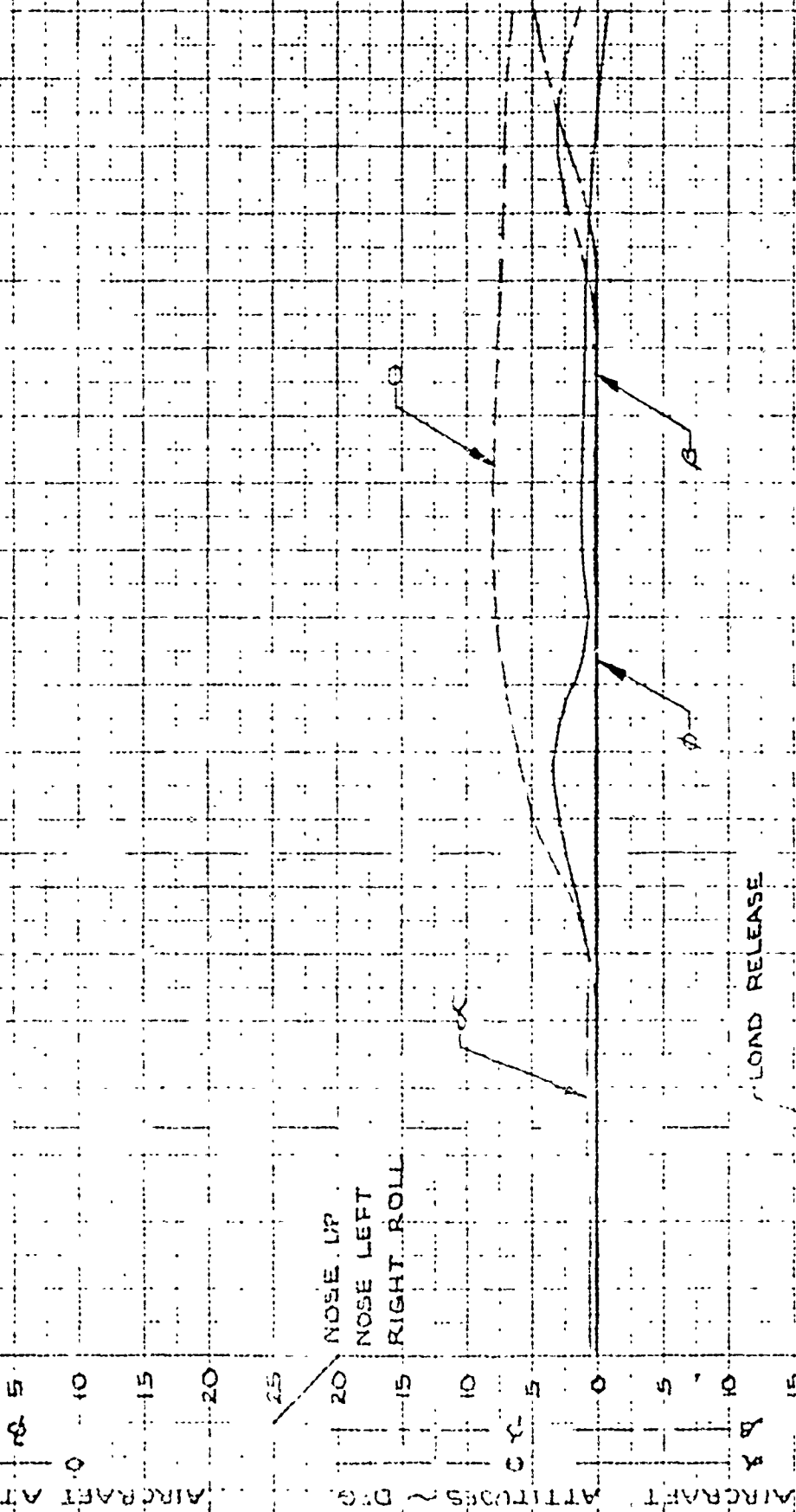
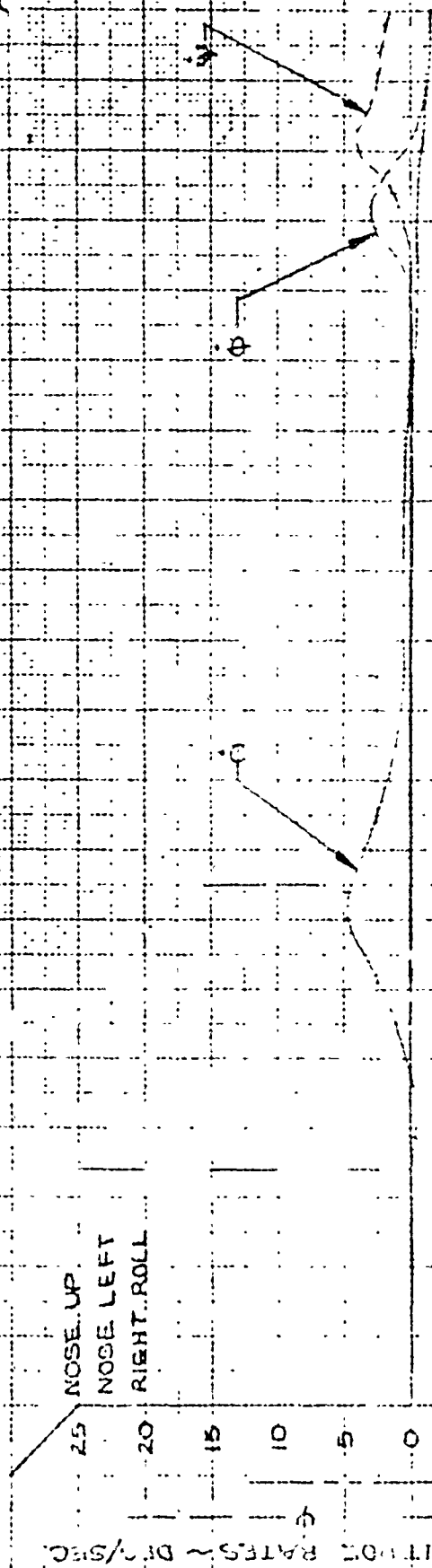
C.G. 26.3% MAC ALT. ~ 4,950 FT.

DROP WT. ~ 23,830 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.6
2	ANGLE OF PITCH	"	9.1
3	C.G. VERT. ACCEL.	g's	1.55
4	C.G. LONG. ACCEL.	"	- 0.046
5	VERT. ACCEL. @ F.S. 277	"	1.51
6	VERT. ACCEL. @ F.S. 1637	"	1.74
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	19.160
8	VERT. BEND. @ F.S. 1568	"	1.030
9	BENDING ~ M _x @ HBL 44L	"	- 0.152
10	SHEAR ~ S _z @ HBL 44L	LBS. X 10 ⁻³	- 1.720
11	PITCH TRIM ACTUATOR ~ S _z	"	- 1.530
12	R.H. RAMP ACTUATOR LOAD	"	0.500
13	L.H. " " " "	"	0.350
14	R.H. SPIDER ARM LOAD	"	8.330
15	L.H. " " " "	"	N.A
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.180
17	L.H. " " " "	"	6.710
18	BENDING ~ M _x @ VSS	IN-LBS. X 10 ⁻⁶	- 0.100
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁵	4.470
20	L.H. " " " "	"	3.470
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.770
22	L.H. " " " "	"	- 1.240
23	RAMP HINGE TOTAL SIDE LOAD	"	0.130
24	EXTRACTION CHUTE FORCE	"	32.36
25	CARGO. LONG. ACCEL.	g's	1.36

FIG. D-12E
ADS-58E

6008
ADS 991



LOAD RELEASE

JOB NO. 1001 SUB. CODE 4.21

17.1.21.1001 SUB. CODE 4.21

TED
DATE 4-23-65
CHECKED *lud*

REF. NO. 12 5473
MODEL C-141A
PAGE 7-74

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC 6008
TEST DATE 4-22-65
FLIGHT 112 DROP NO. 13

SHEET 1 OF 2

CARGO WT 27,190 LBS

RUN CONDITIONS

1. G.W. 185,300 LBS.
2. C.G. PRIOR TO DROP ~ 26.2% MAC
3. C.G. AFTER DROP ~ 29.6% MAC
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR 1.23 (4 ENGINES)
7. α_H ~ 1.0 DEG (P/C NU)

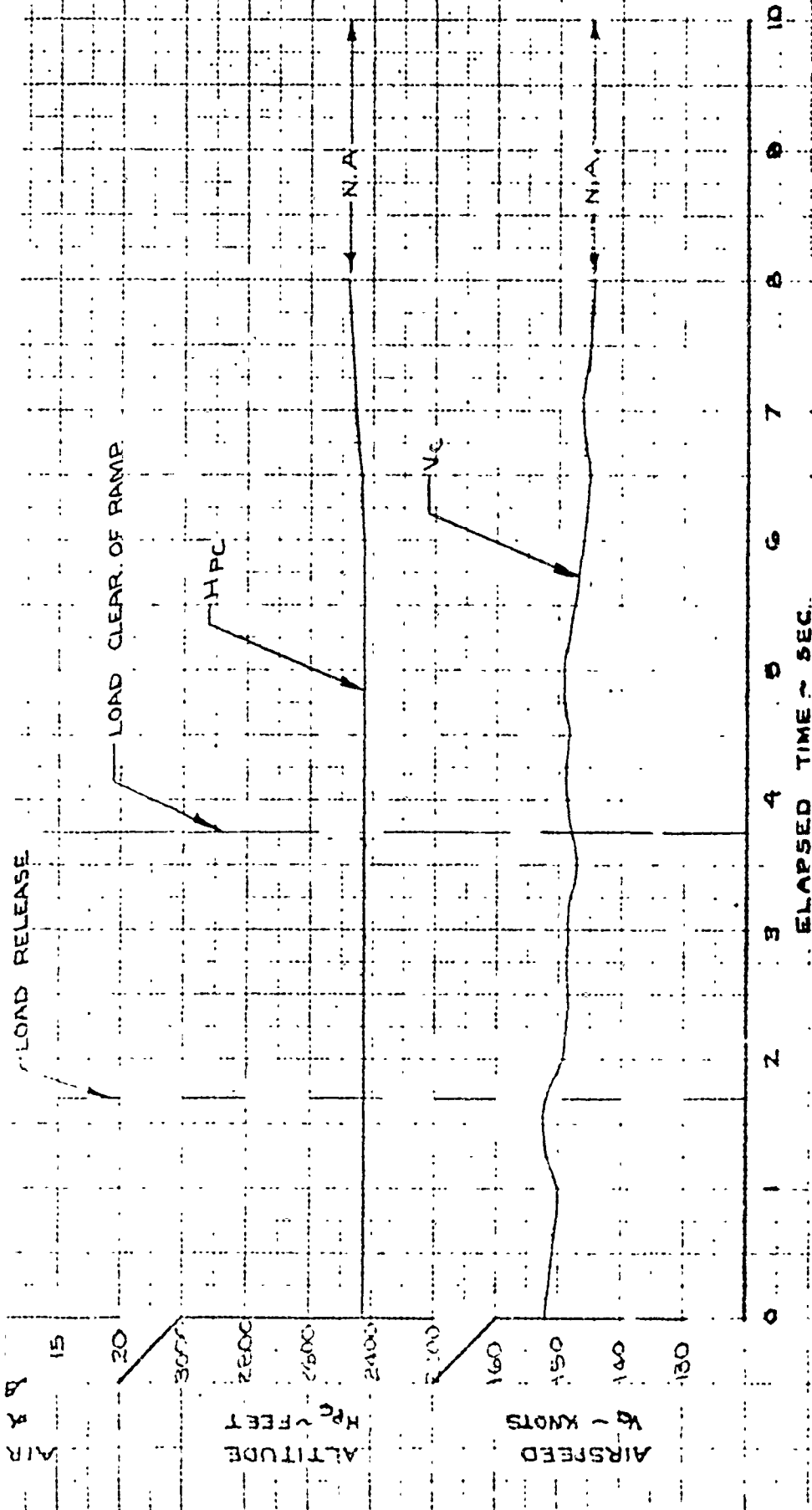
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN
3. CARGO C.G. POSITIONS
LONG. ~ F.S. 875
VERT. ~ W.L. 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES - 2
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT ~ 0.25
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D-13A



REVISED
12-14-65
MBH

6008
ADS-59A

REVISED
5-4-65 *g*

6008
ADS 59B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

CONTROL FORCES ~ LBS

1274 5403 ADS 59B NO 6008

F_y

F_x

F_z

T.E. UP

AILERON POSITION ~ DEG.

20
15
10
5
0
5

δ_{al}

-LOAD RELEASE



PREPARED BY **TED**
 DATE **4-22-65**
 CHECKED BY **JWS**

ENGINEERING DATA COMPANY
 10000 WILLOW CREEK ROAD
 WILLOW CREEK, ILLINOIS 60091

REF. NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-75**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
 AF 63 8077 LAC 6008
 TEST DATE **4-22-65**
 FLIGHT 112 DROP NO 13
 SHEET **2** OF **1**

CARGO WT. 27,190 LBS.

NOTE:
 SEE FIGURE 1 SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

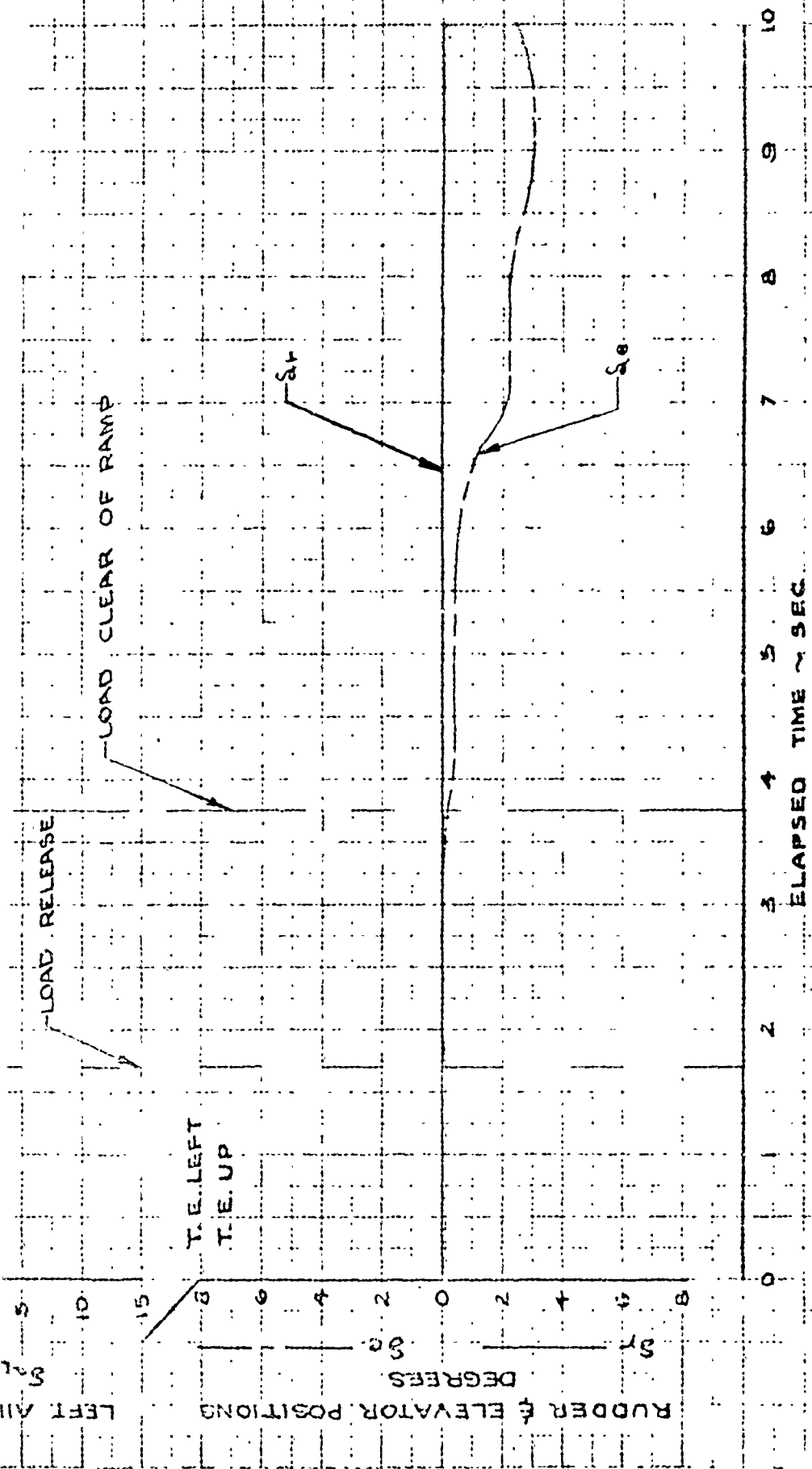
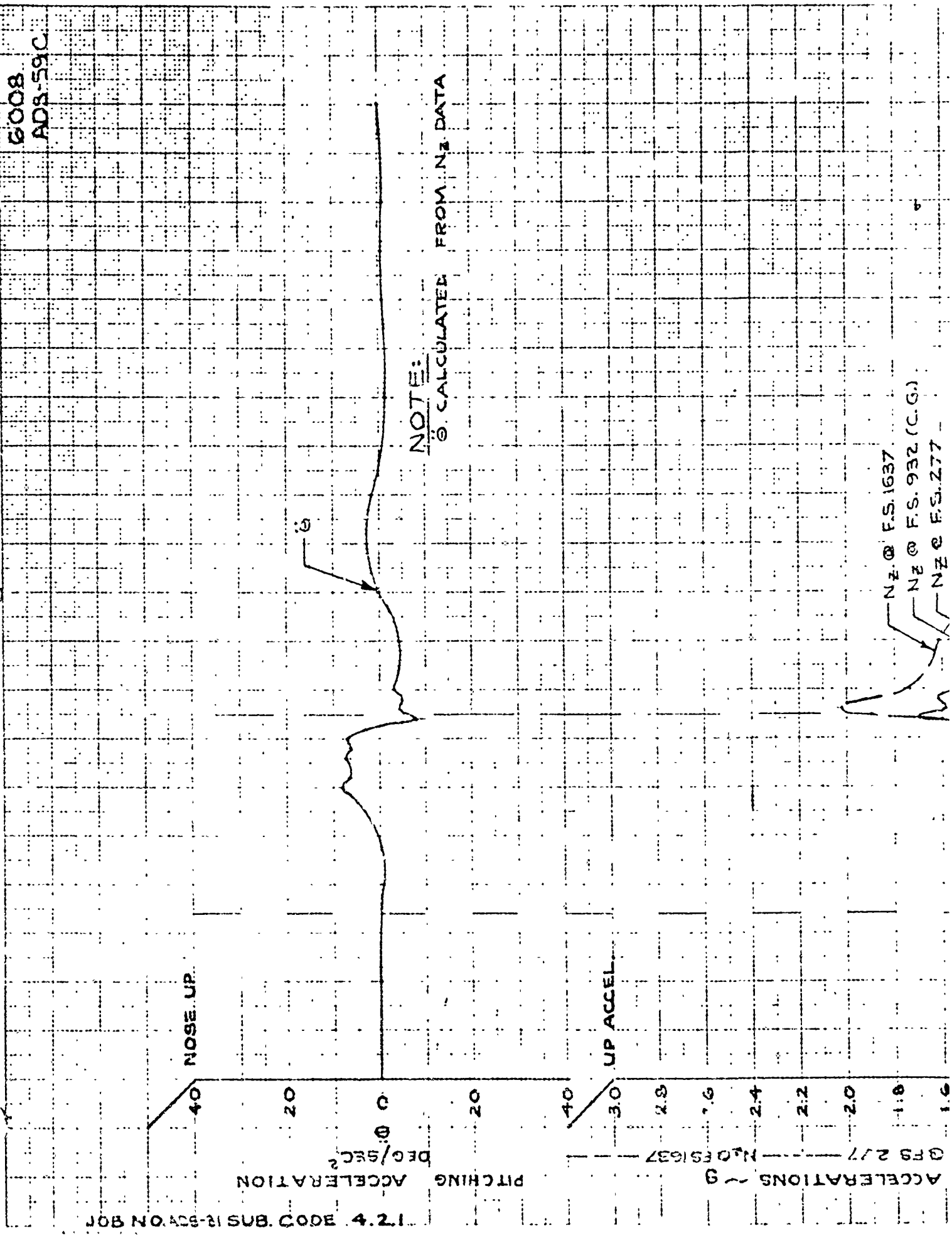


FIGURE 1

6008
 AD-59B
 REVISED 5-4-6
 JWS



PREPARED BY: TED E. TROTT
 DATE: 4-23-65
 CHECKED BY: *[Signature]*

EXHIBIT 101-1A COMBAT

REPORT NO: ER 5473
 MODEL: C-241A
 PAGE: D-76

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AFG3-B077 LAC 6008
 TEST DATE: 4-22-65
 FLIGHT 112 DROP NO. 13

SHEET 3 OF 7

CARGO WT. 27,190 LBS

NOTE:
 SEE FIGURE 1 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

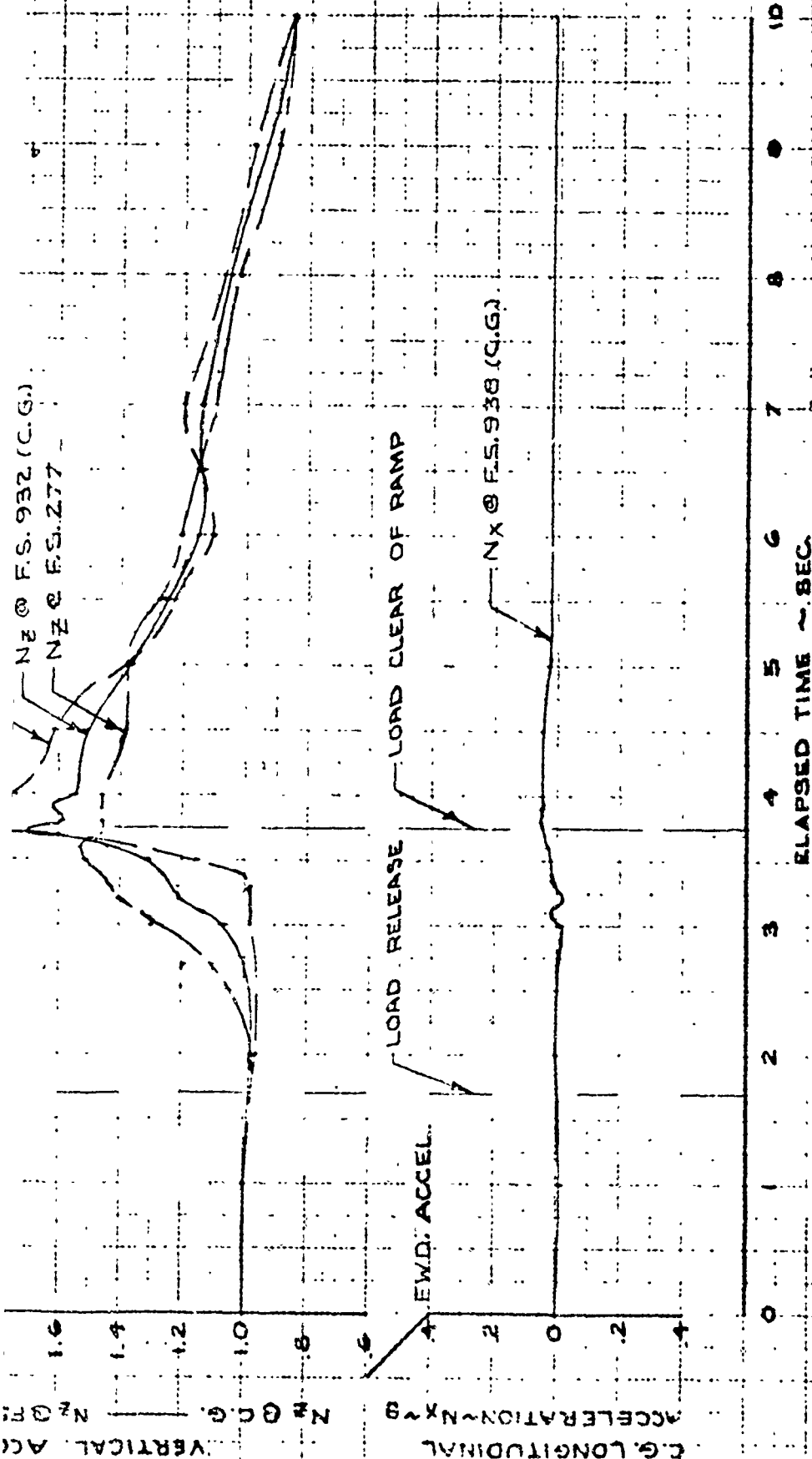


FIGURE D-13C

2008
 ADS-59C

REVISED
 5-9-65
 PLW

6008
ADS-SAD

ADP NOADS-31 SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA. 1500 1400 1300 1200 1100 1000 900 800 700 600 500 400 300 200 100 0

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA



PREPARED BY TED
DATE 4-23-65
CHECKED BY *fund*

ENGINEERED BY COMPANY
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED

REPORT NO ER 5473
MODEL C-141A
PAGE D-77

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 4-22-65
FLIGHT 112 DROP NO. 13

SHEET 4 OF 7

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE 2-13, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

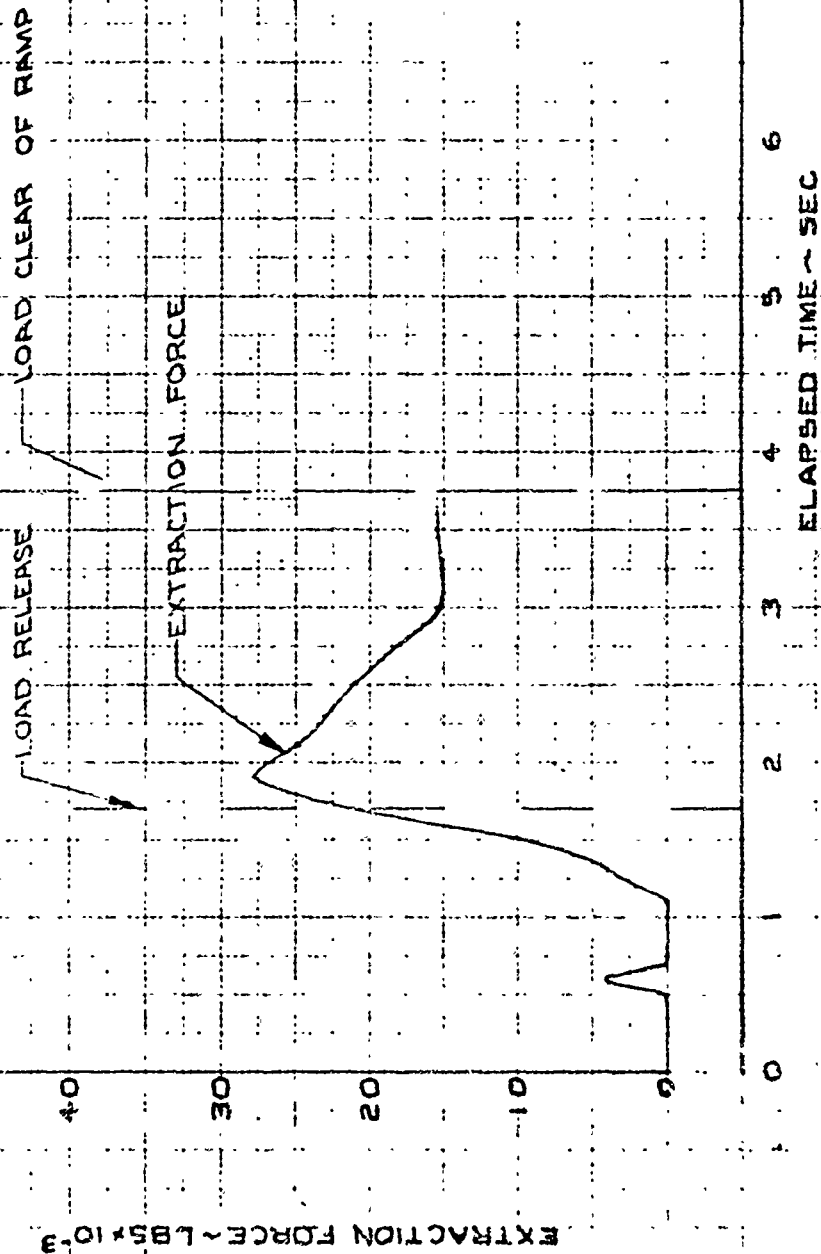
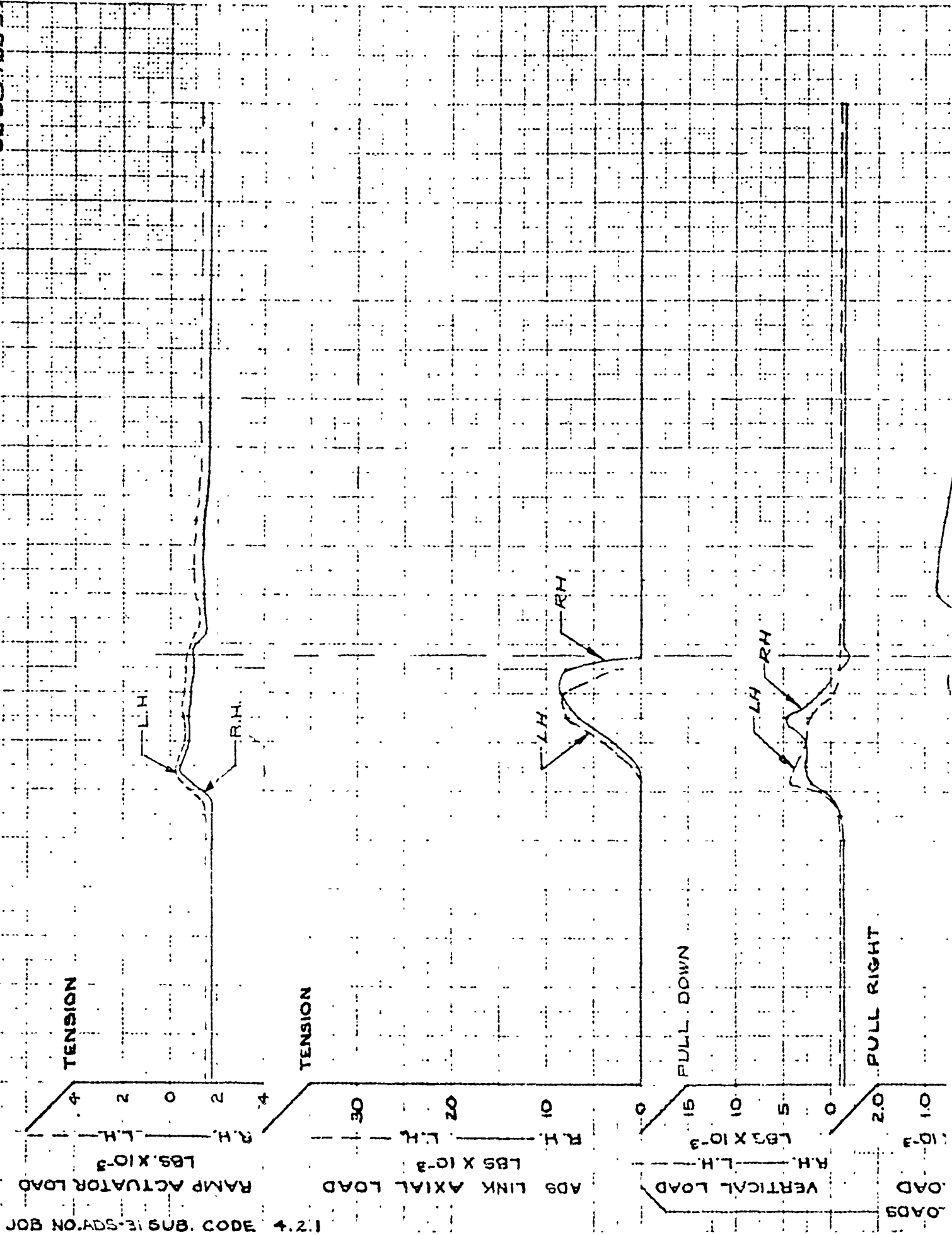


FIGURE 2-13 D

6008
ADS-59 D
REVISED 5-4-65
fund

6008-ADS-59E



JOB NO. ADS-31 SUB. CODE 4.2.1

REPORT INTENDED FOR RSA

DATE 4-26-65

PROJECT

7000

PROPERTY OF THE COMPANY

PROJECT AIRCRAFT

REPORT NO. ER 5473

MODEL C-141A

PAGE D-78

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 4-22-65

FLIGHT 112

DROP NO. 13

SHEET 5 OF 7

CARGO WT. 27,190 LBS

NOTE:
SEE FIGURE 13 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

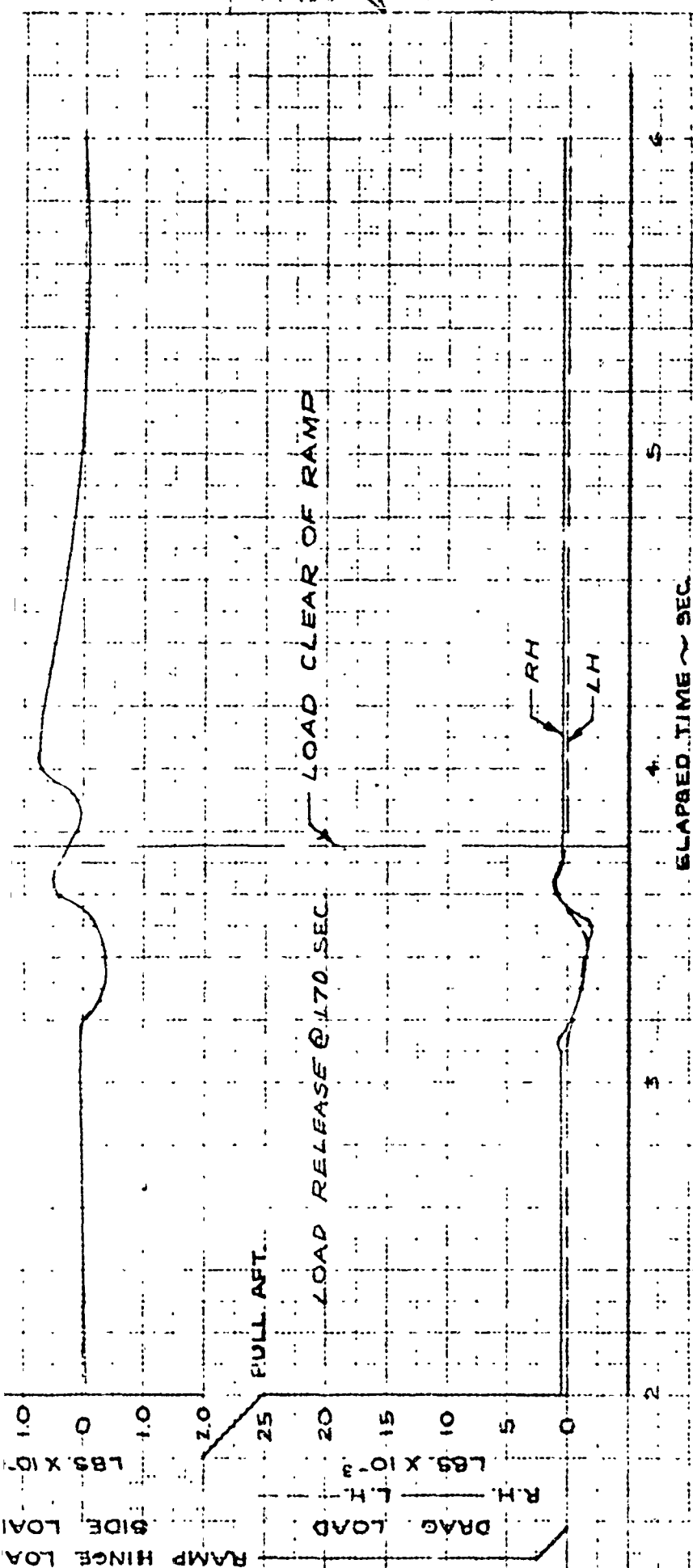
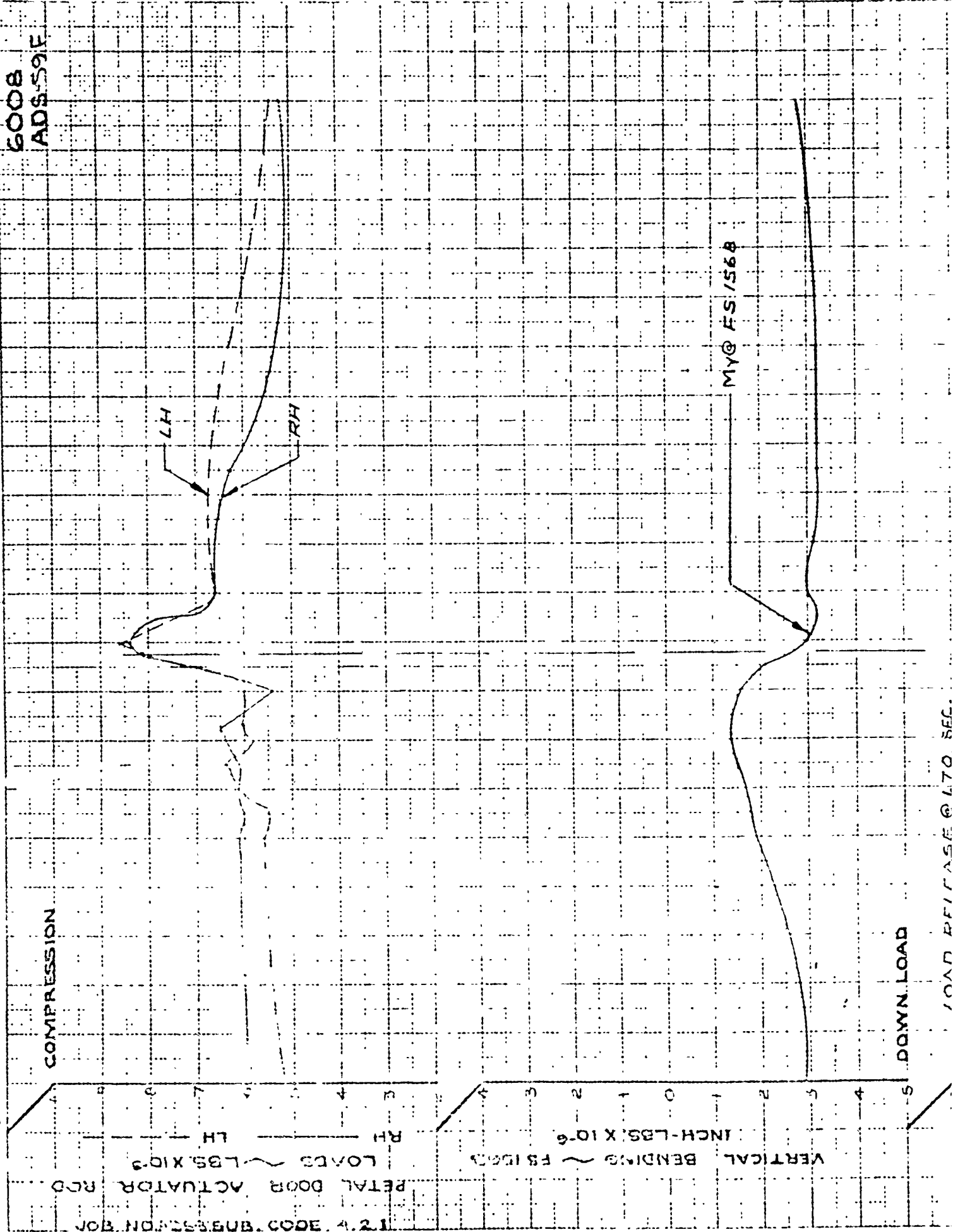


FIGURE 13E

6008

ADS-59E

REVISED 5-7-65
7100



EDF REA
 26-65
 JWS

WILKINSON COMPANY
 AIRCRAFT ENGINE PARTS DIVISION

REPORT NO. 5473
 MODEL C-141A
 DATE D-79

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AFG3-B077 LAC 6008
 TEST DATE 4-22-65
 FLIGHT 112 DROP NO. 13

SHEET 6 OF 7

CARGO WT. 27,190 LBS

NOTE:
 SEE FIGURE 13A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

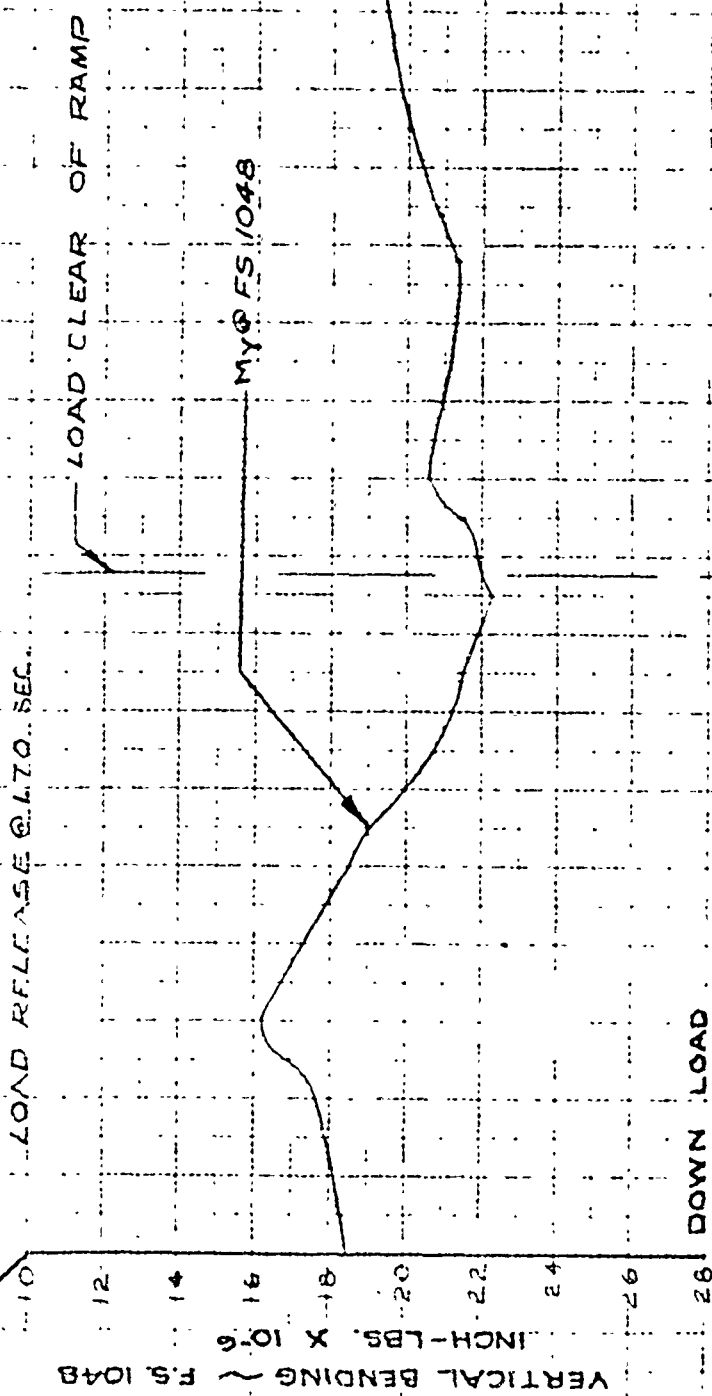
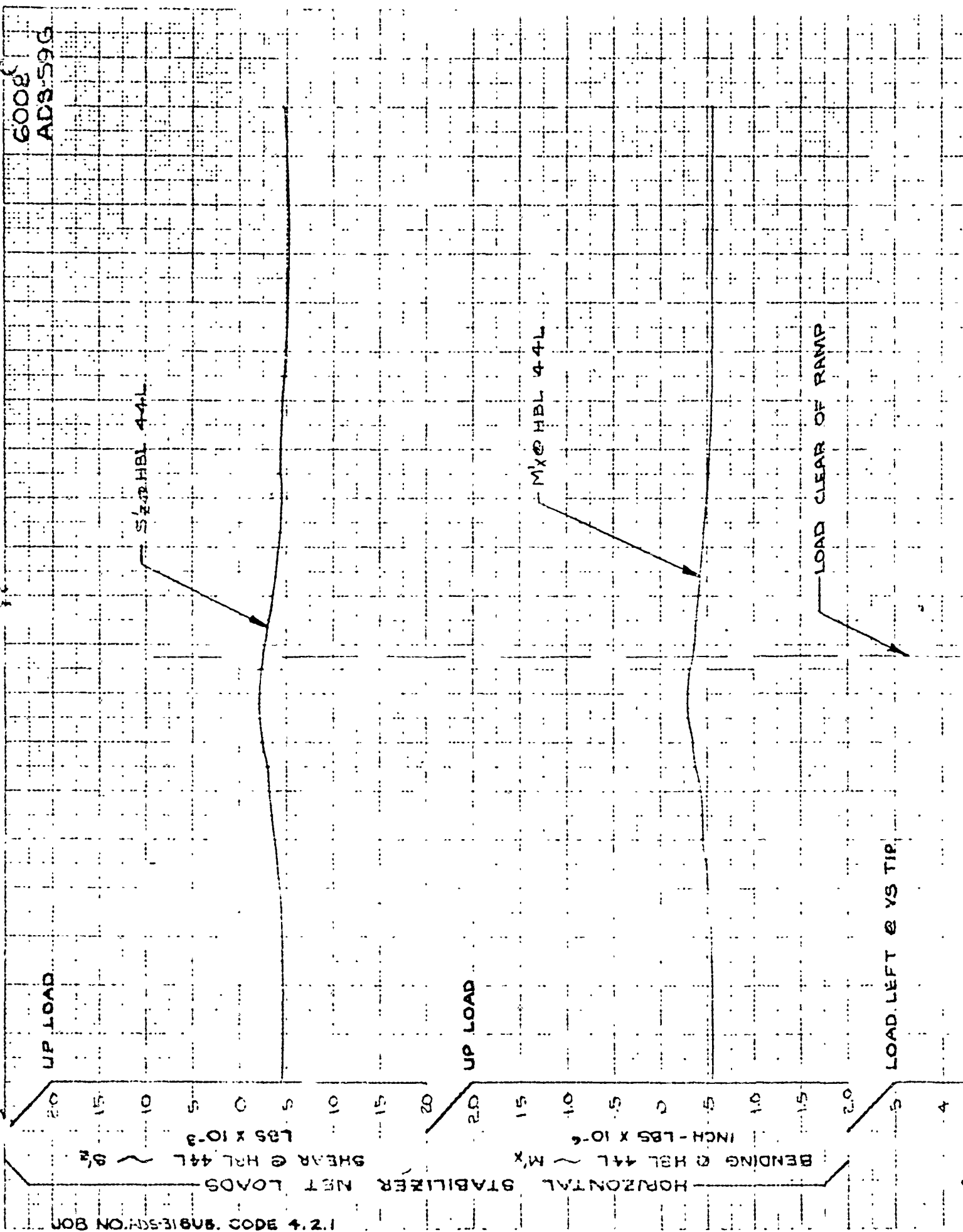


FIGURE 13F

6008
 ADS-59F
 REVISED 5-4-67
 FHW

6008
ADS-59G



TED RSA

A-22-66

[Handwritten signature]

REF ID: ER 5473
MODEL: C-141A
PAGE: D-80

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: A-22-66

FLIGHT 112

DROP NO. 13

SHEET 1 OF 1

CARGO WT. 27,190 LBS.

NOTE:

SEE FIGURE 2-3G SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

3

4

5

FIGURE 2-3G

6008

ADS-59.G

REVISED
5-4-66 JLM

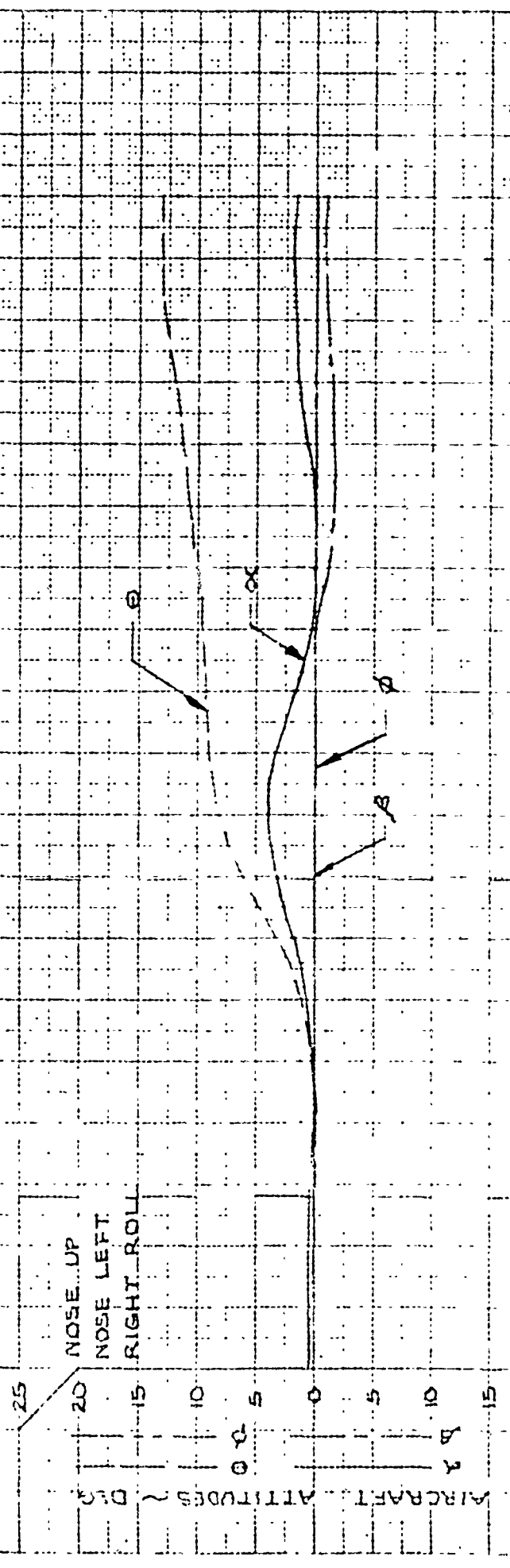
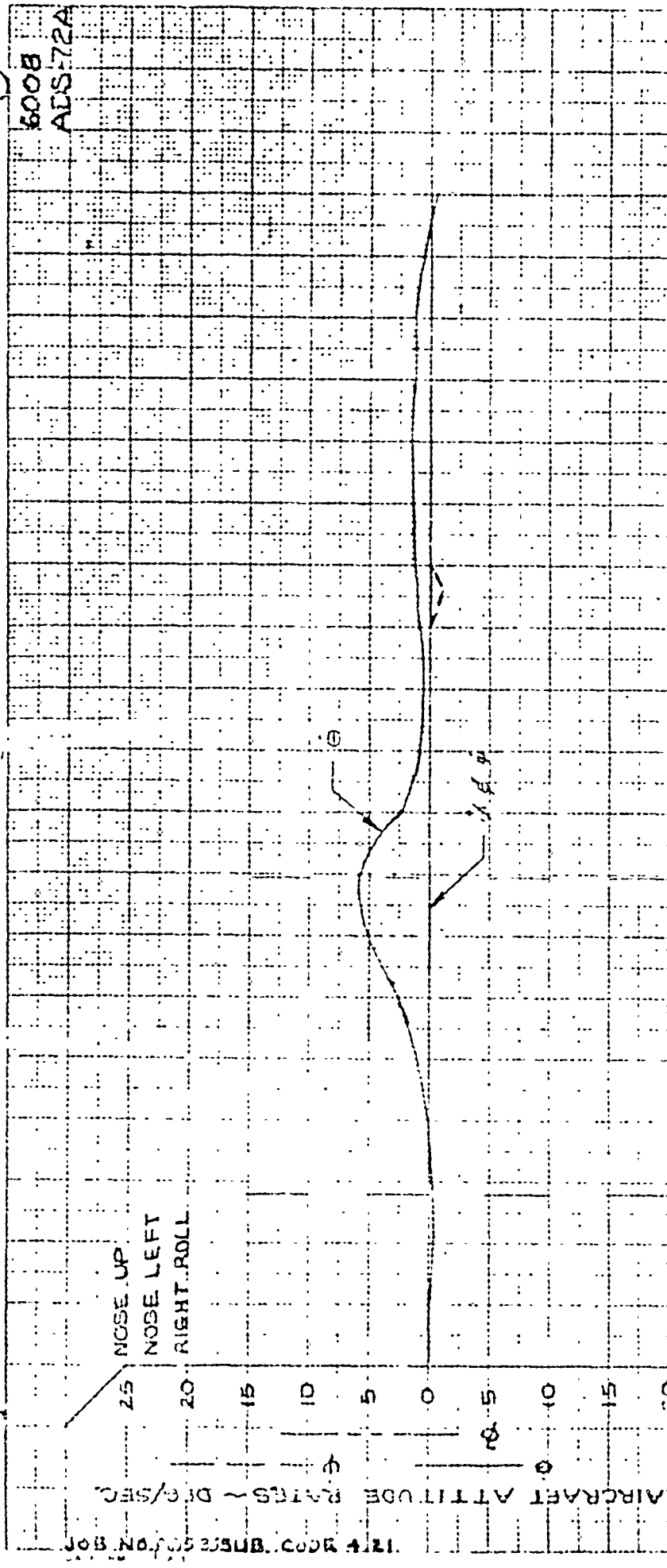
LOAD RELEASE AT 1.7 SEC.

MIX @ VSS 345

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ MIX
~ INCH-LBS X 10⁻⁶

4 3 2 1 0 1 2 3 4 5

6008
ADS-72A



JOB NO. 00535 SUB. CODE 421

PREPARED BY RSA
DATE 4-30-65
CHECKED BY JWD

KILLED GEORGIA COMPANY

REPORT NO ER 5473
MODEL C-141A
PAGE D-81

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF838077 LAC 6008
TEST DATE 4-30-65
FLIGHT 117 DROP NO 4 R

SHEET 1 OF 7

CARGO WT. 27,450 LBS

FLYING CONDITIONS

1. G.W. ~ 187,900 LBS
2. C.G. PRIOR TO DROP ~ 26.8 %MAC
3. C.G. AFTER DROP ~ 30.2 %MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR ~ NA
7. TH ~ NA

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
LONG. ~ FS 878
VERT. ~ WL 179

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE / CARGO WT. ~ 0.81
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D-4A

6008
ADS-72A

LOAD CLEAR OF RAMP

LOAD RELEASE

ALTITUDE ~ NA

AIR SPEED ~ NA

ELAPSED TIME ~ SEC

ALTITUDE
H₂ ~ FEET

AIR SPEED
V₀ ~ KNOTS

6008
ADS-72B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

F_y

F_a

F_e

CONTROL FORCES - LBS.

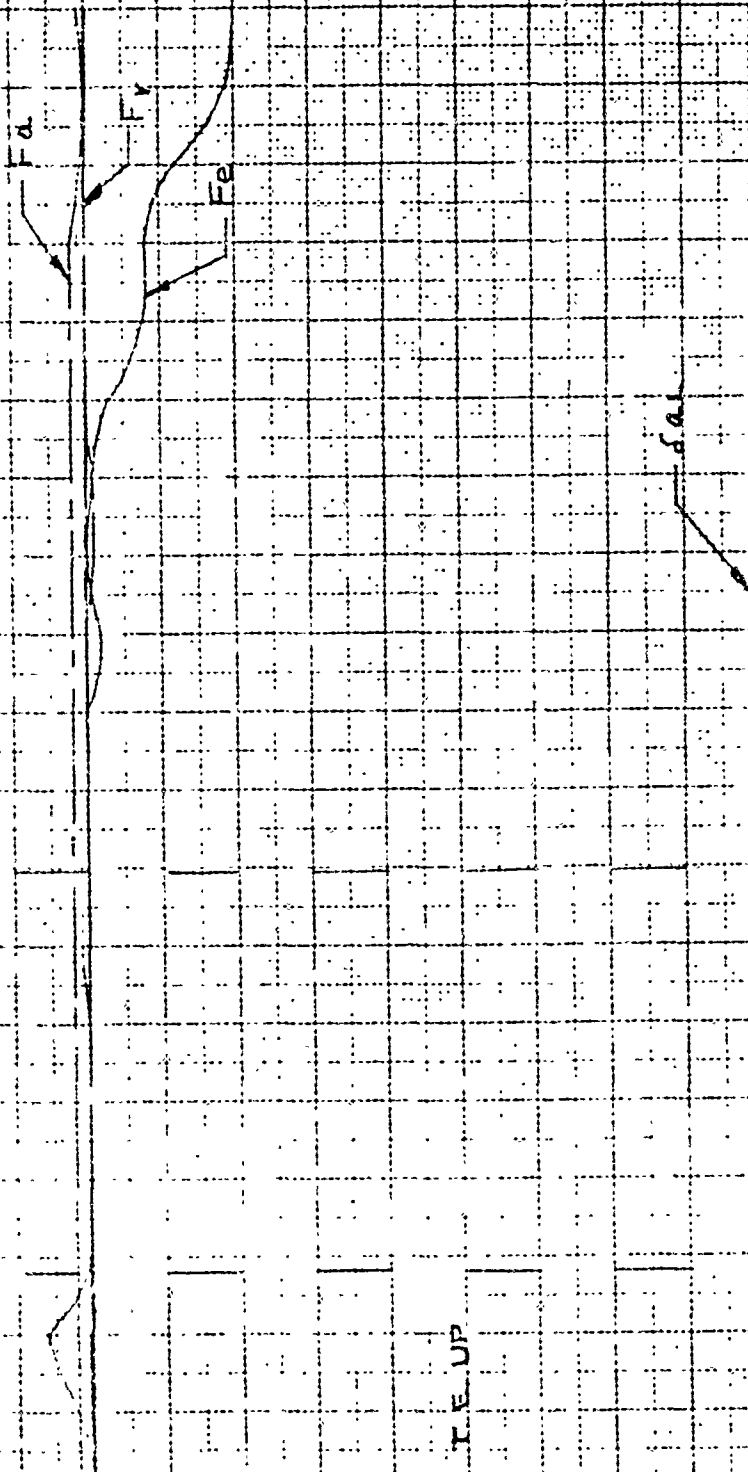
124 3009 WMS 55 50V ON 004

T.E. UP

20
15
10
5
0
5

AILERON POSITION - DEG

δa_l



PREPARED BY PSA
DATE 8-1-65
CHECKED BY Jux

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-82

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63.8077

LAC 6008

TEST DATE 4-30-65

FLIGHT 117

DROP NO 4R

SHEET 2 OF 7

CARGO WT 27,450 LBS

NOTE:

SEE FIGURE 14 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

LOAD CLEAR OF RAMD

LOAD RELEASE

T.E. LEFT
T.E. UP

dr

de

ELAPSED TIME - SEC

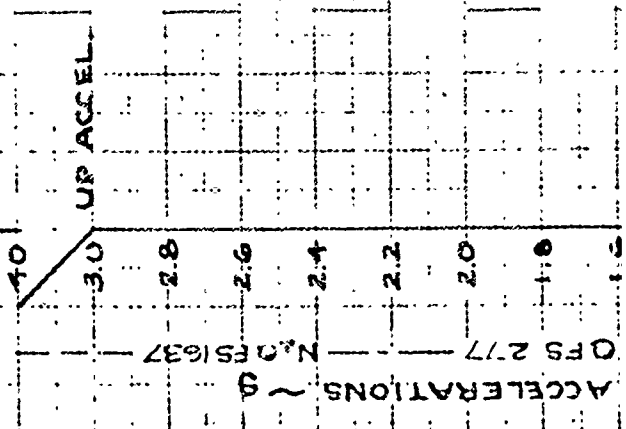
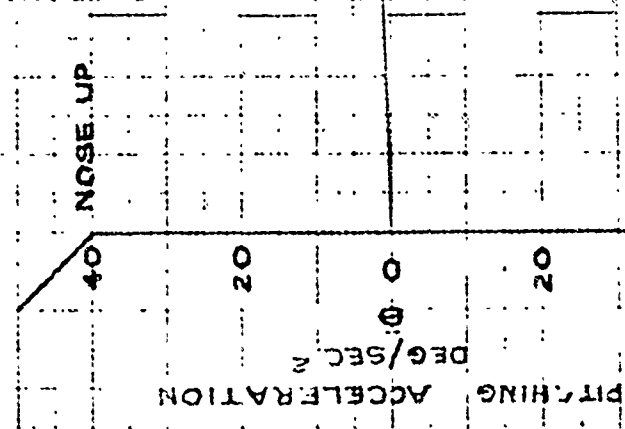
RUDDER & ELEVATOR POSITIONS
DEGREES

FIGURE 2-45

6008
AD3-72B

6008
FDS-12C

JOB NO. 000 SUB CODE 4.2.1



NOTE:
 $\ddot{\theta}$ CALCULATED FROM N_z DATA.

N_z @ F.S. 1637

N_z @ F.S. 277

N_z @ F.S. 932 (C.G.)

PREPARED BY: TED
DATE: 4-30-65
CHECKED BY: JAW

LOCKHEED JET PROPULSION COMPANY
AERONAUTICAL ENGINEERING DIVISION

REPORT NO. ER 5473
MODEL: C-141A
PAGE: D-83

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-B077 LAC 6008
TEST DATE: 4-30-65
FLIGHT 117 DROP NO-14 R

SHEET 3 OF 1

CARGO WT 21,450 LBS

NOTE:

SEE FIGURE 2-14C SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

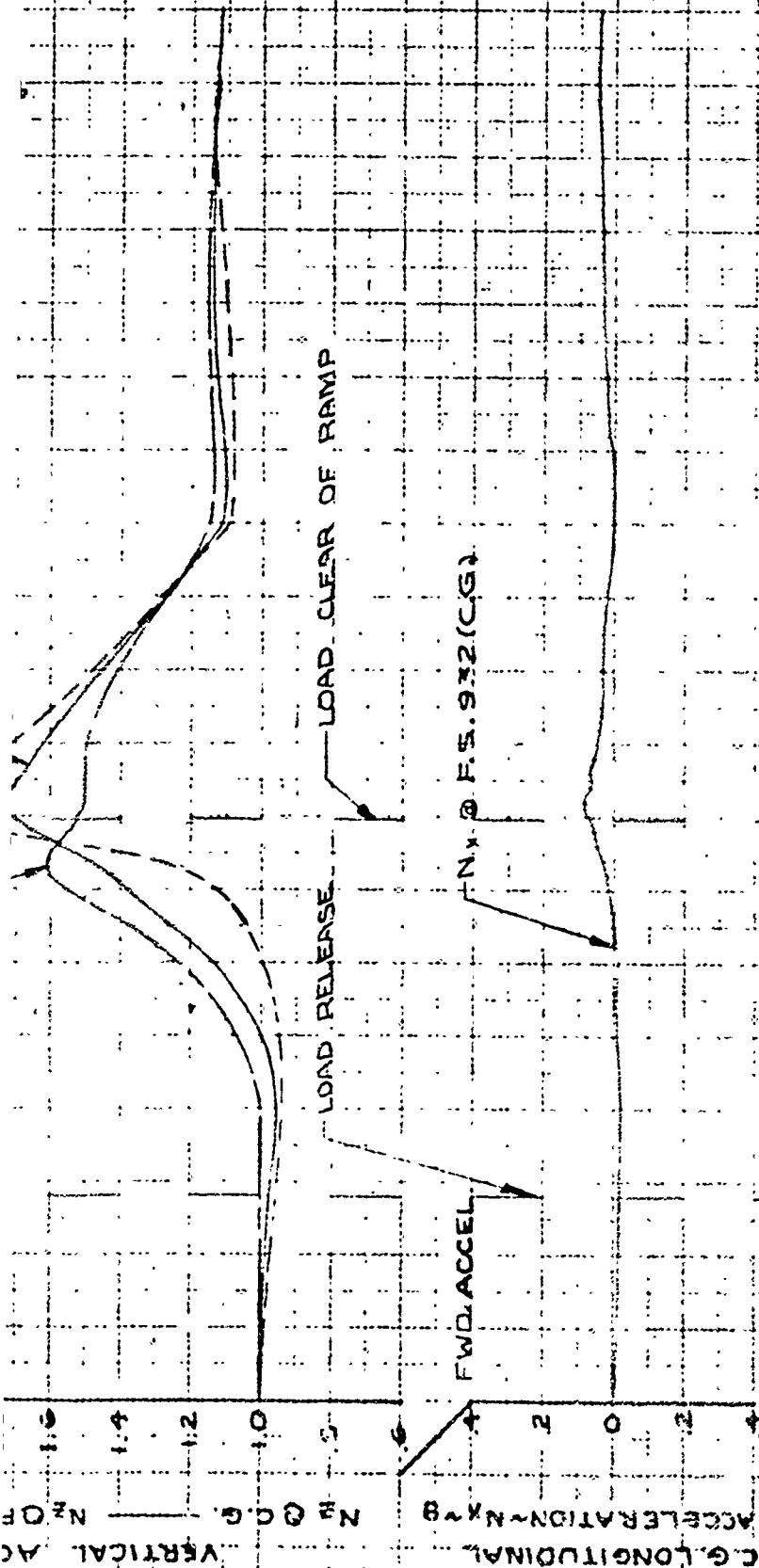
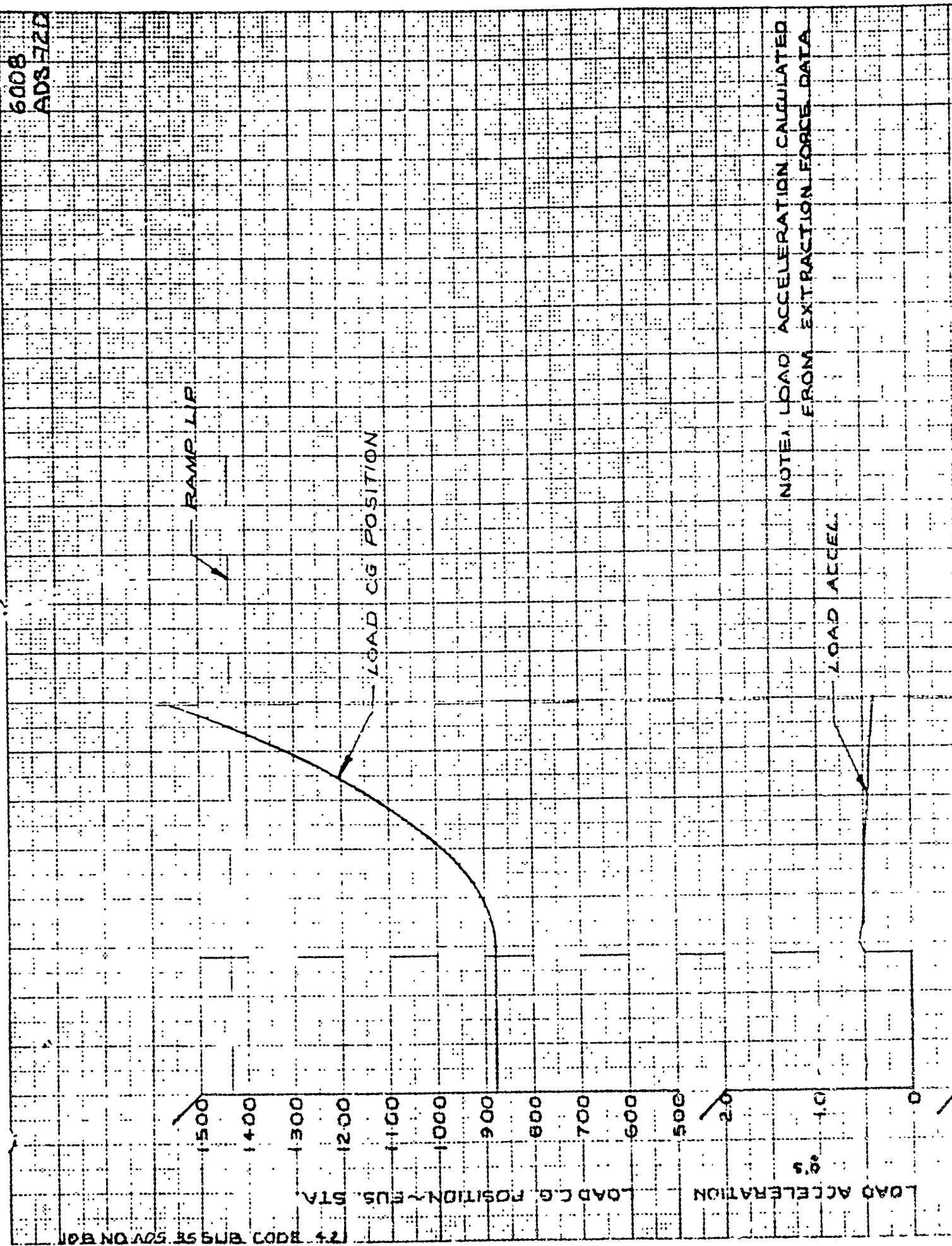


FIGURE 2-14C

6008
ADS-72C

6008
ADS 72D



PREPARED BY RSA
DATE 4-30-65
CHECKED BY Juf

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-84

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-1077 LAC 6008
TEST DATE 4-30-65
FLIGHT 117 DROP NO. 14 R

SHEET 4 OF 7

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

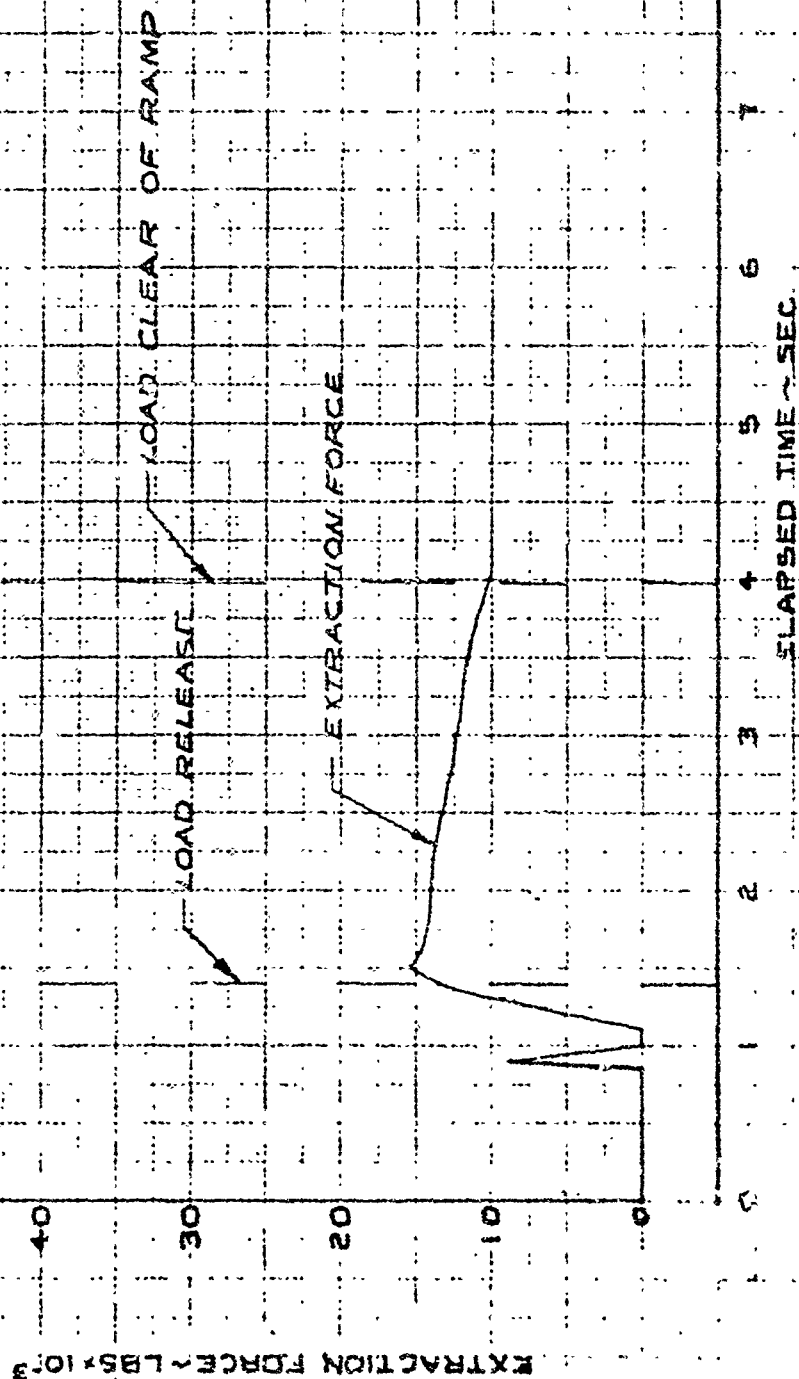


FIGURE D-14 D

6008
ADS-72 D



PREPARED BY TED
DATE 5-1-65
CHECKED BY TED

LOCKHEED AIRCRAFT COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-85

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 4-30-65

FLIGHT 171

DROP NO. 142

SHEET 5 OF 7

CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

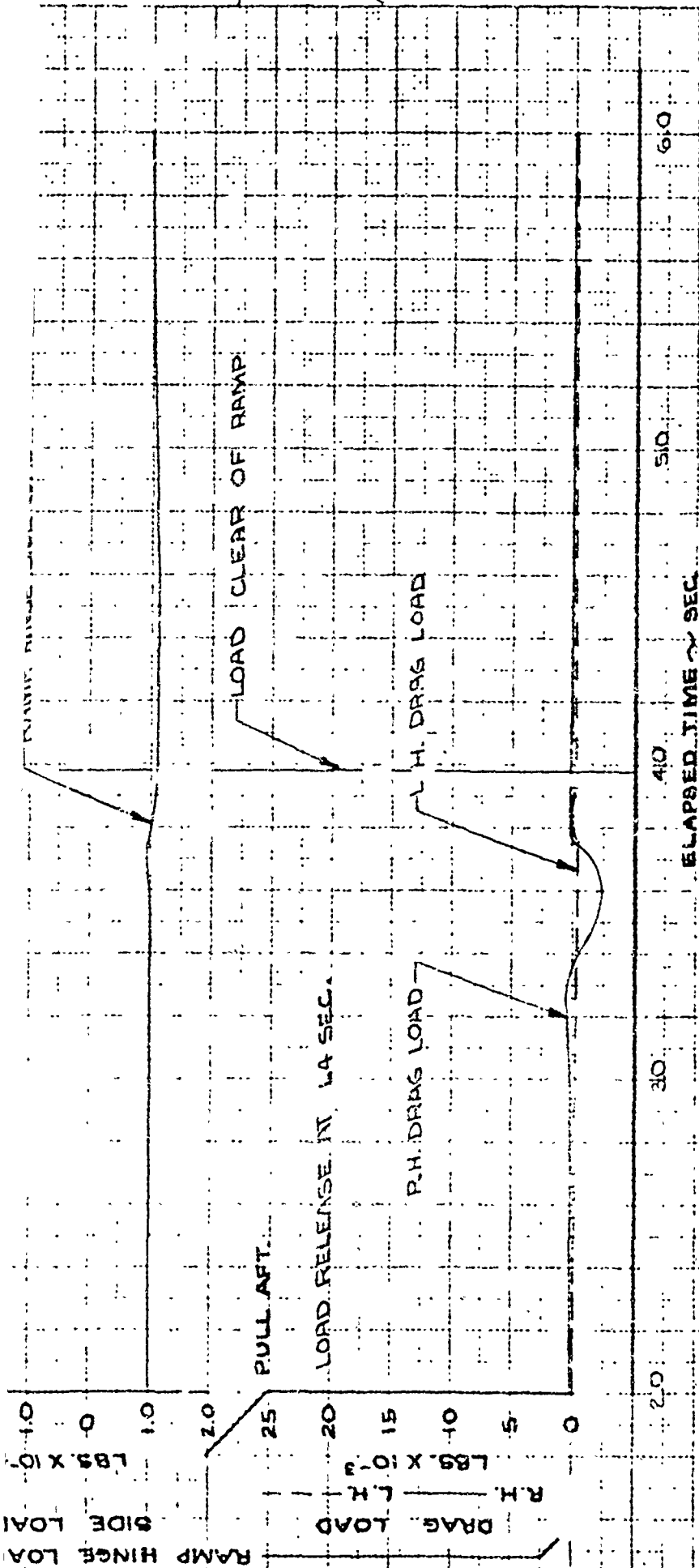
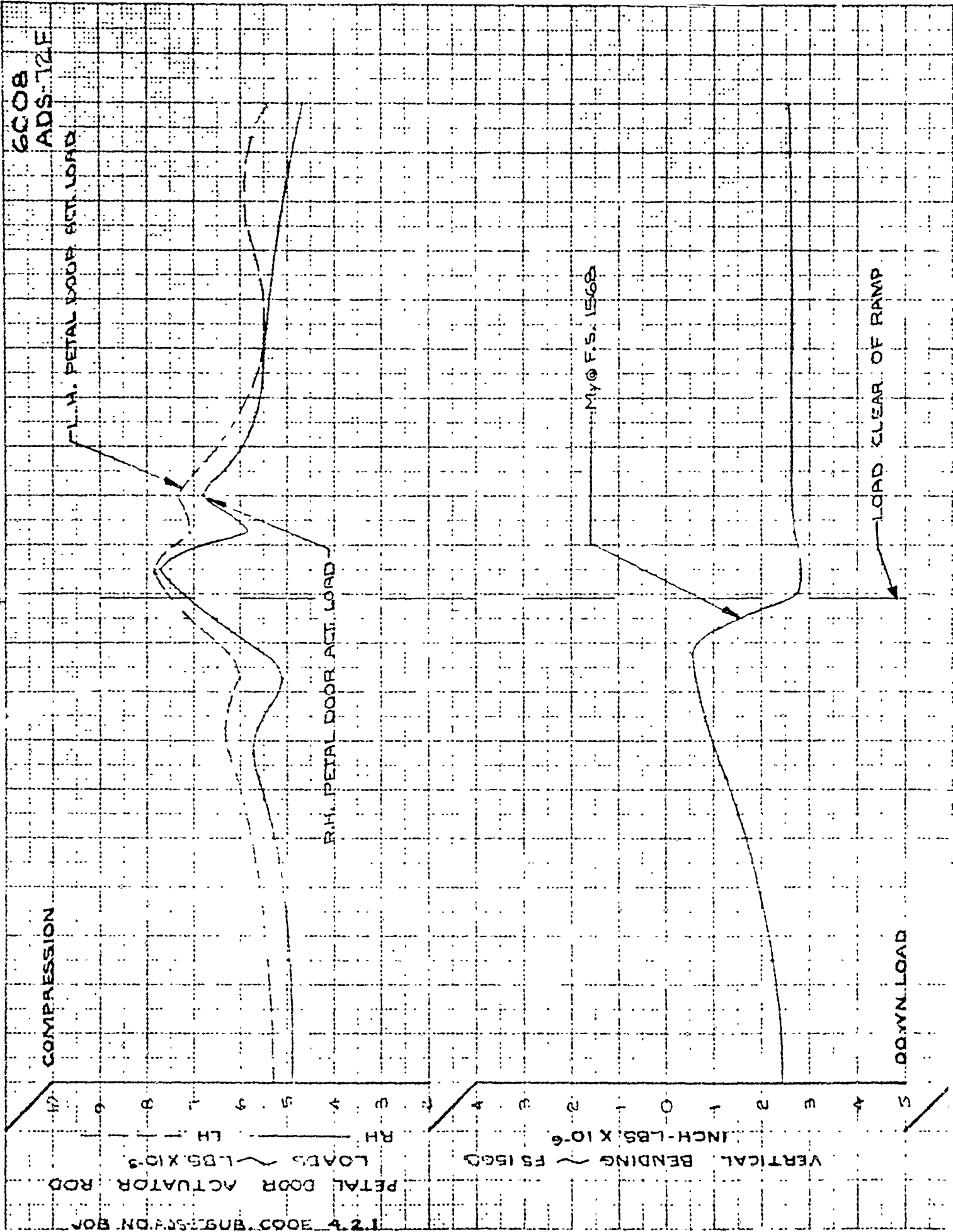


FIGURE D-4E

6008
ADS-12E



PREPARED BY T.E.D.
DATE 5-1-65
CHECKED BY JMD

LOCKHEED GEORGIA COMPANY
AERONAUTICAL ENGINEERING DIVISION

REPORT NO. FR 5473
MODEL C-141A
PAGE D-86

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE: 4-30-65
FLIGHT 117 DROP NO. 14 R
SHEET 6 OF 7
CARGO WT. 27,450 LBS

NOTE:
SEE FIGURE D-14F SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

LOAD RELEASE AT 1.4 SEC.

MYCES 104B

DATA N/A AFTER 4.0 SEC. E.T.

60

50

40

30

20

ELAPSED TIME ~ SEC.

DOWN LOAD

FIGURE D-14F

VERTICAL BENDING ~ F.S. 104B

INCH-LBS. X 10⁻⁶

6008
ADS-72F

6008
ADS 12G

UP LOAD

20
15
10
5
0
-5
-10
-15
-20

SHEAR @ HBL 44L ~ 8%

LBS X 10⁻³

S₁₂ @ HBL 44L

UP LOAD

2.0
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-2.0

BENDING @ HBL 44L ~ M_x

INCH-LBS X 10⁻⁶

M_x @ HBL 44L

LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

LOAD RELEASE AT 1.4 SEC.

JOB NO. ADS-388UB. CODE 4.2.1

PREPARED BY **TED**
 DATE **5-1-65**
 JWP

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-87**

**TIME HISTORY OF AERIAL DELIVERY
 MANEUVER**

MODEL C-141A
AF63-B077 **LAC 6008**
TEST DATE: 4-30-65
FLIGHT 117 **DROP NO. 4 R**

SHEET 1 OF 1

CARGO WT. 27,450 LBS

NOTE:
 SEE FIGURE 1 SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

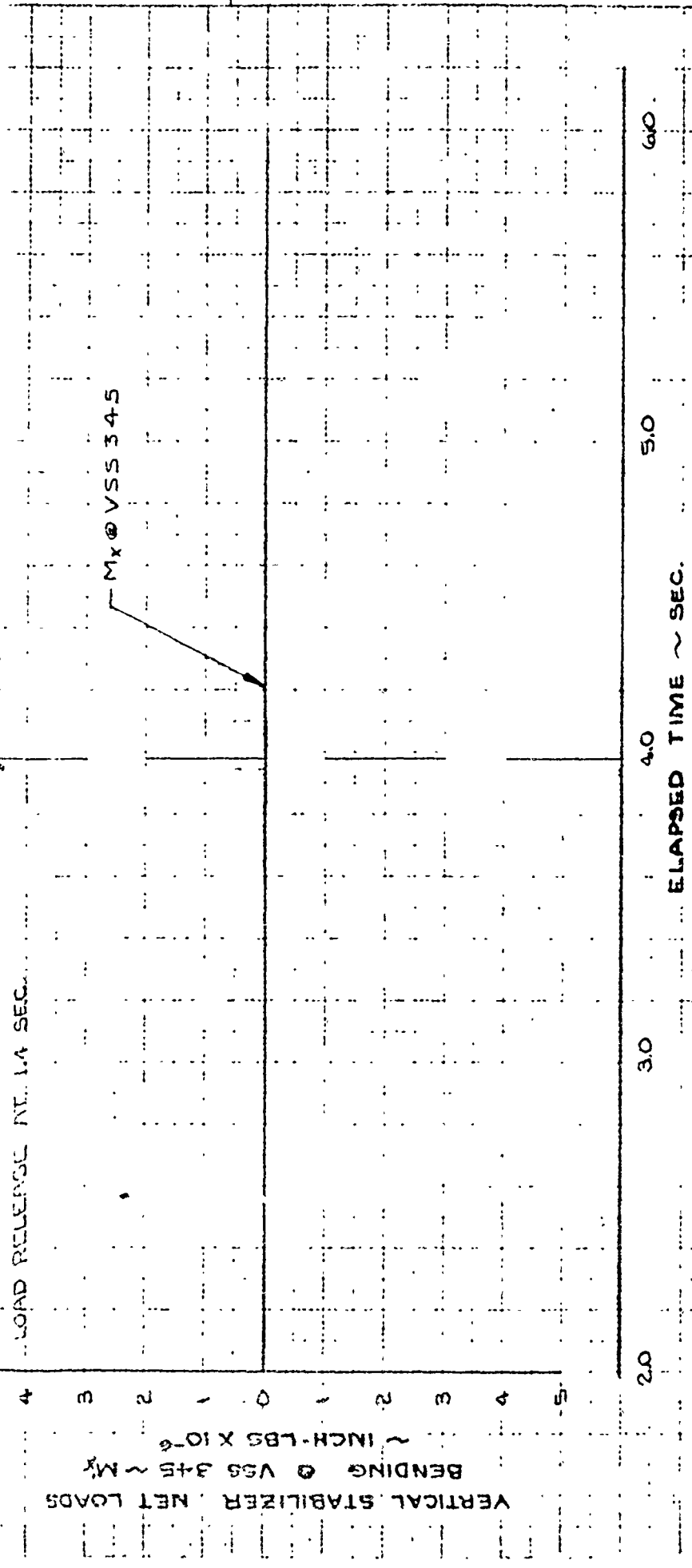
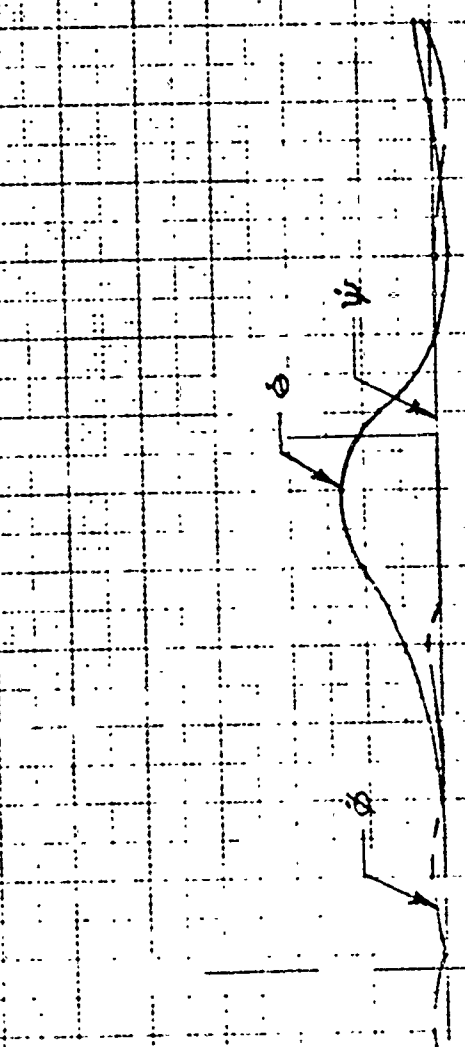


FIGURE D-14 G

6008
ADS-176

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

NOSE UP
NOSE LEFT
RIGHT ROLL

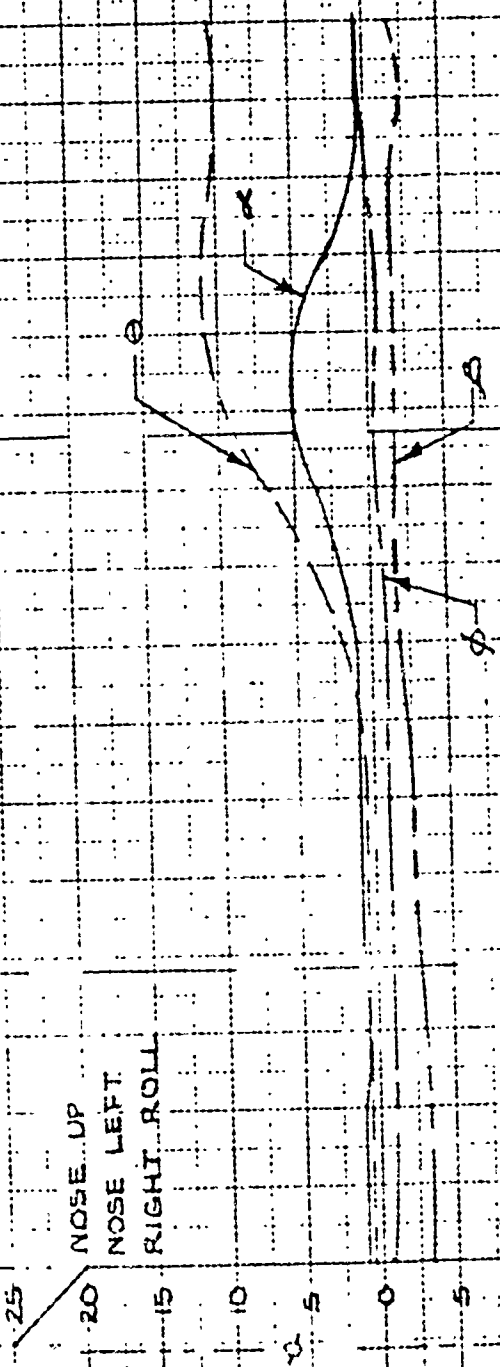


LOAD RELEASE

LOAD CLEAR OF RAMP

AIRCRAFT ATTITUDES ~ DEG

NOSE UP
NOSE LEFT
RIGHT ROLL



PREPARED BY RSA
 DATE 5-3-65
 CHECKED BY JNK

CRUEL GEORGIA COMPANY
 AIRCRAFT DELIVERY CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE D-88

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077 LAC 6008

TEST DATE 5-4-65

FLIGHT 118 DROP NO. 15

SHEET 1 OF 7

CARGO WT. 27930 LBS

RUN CONDITIONS

1. G.W. ~ 18800 LBS.
2. C.G. PRIOR TO DROP ~ 26.5% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. α ~ 0.8 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F.S. 876
VERY. ~ WL 179

EXTRACTION CHUTE DESCRIPTION

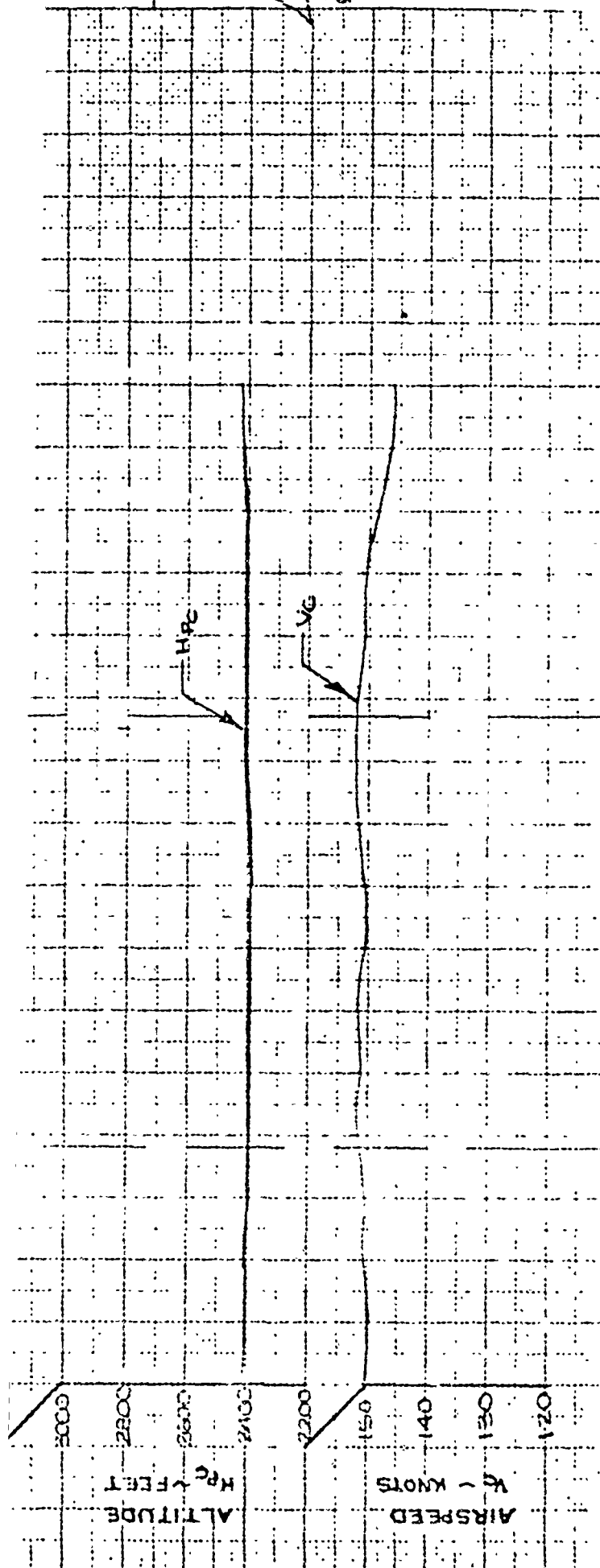
1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 15'
3. RATED CHUTE FLOW/CARGO WT. ~ 220
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 2-15A

6008

ADS.73A

REVISED 12-14-65
 NBN



124 3403 AMS 28 EMB 800

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

50

60

70

CONTROL FORCES ~ LBS.

F_y

F_a

F_e

LEFT AILERON POSITION ~ DEG.

δ_L

15

10

T.E. LEFT

T.E. UP

LOAD RELEASE

LOAD CLEAR OF RAMP

F_c

F_a

F_r

δ_{al}

6008

ADS 73B

PREPARED BY RSA
DATE 5-5-65
CHKD BY JWP

REPORT NO. ER 5473
MODEL C-141A
PAGE D-89

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63.8077 LAC 6008
TEST DATE 13-4-65
FLIGHT 1118 DROP NO. 15
SHEET 2 OF 7
CARGO WT. 27930 LBS.

NOTE:
SEE FIGURE 1 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

RUDDER & ELEVATOR POSITIONS
DEGREES
T.E. LEFT
T.E. UP

FIGURE D-15B

6008
ADS 73B

6008

ADS 73C

JOB NO. AUC335 SUB. CODE 4.2.1

PITCHING ACCELERATION

SEC²

NOSE UP

40

20

0

20

40

UP ACCEL.

3.0

2.8

2.6

2.4

2.2

2.0

1.8

1.6

1.4

TICAL ACCELERATIONS ~ 9

NZ @ FS 277

NZ @ FS 1637

NOTE: δ CALCULATED FROM NZ DATA

δ

LOAD RELEASE

LOAD CLEAR OF RAMP

NZ @ FS 1637

NZ @ FS 932 G

NZ @ FS 277

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AFG3-B077 LAC 6008
 TEST DATE 5-4-65
 FLIGHT ~ 118 DROP NO. 15
 SHEET 3 OF 7
 CARGO WT. 27930 LBS.

NOTE:
 SEE FIGURE D-15C SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

10
9
8
7
6
5
4
3
2
1
0

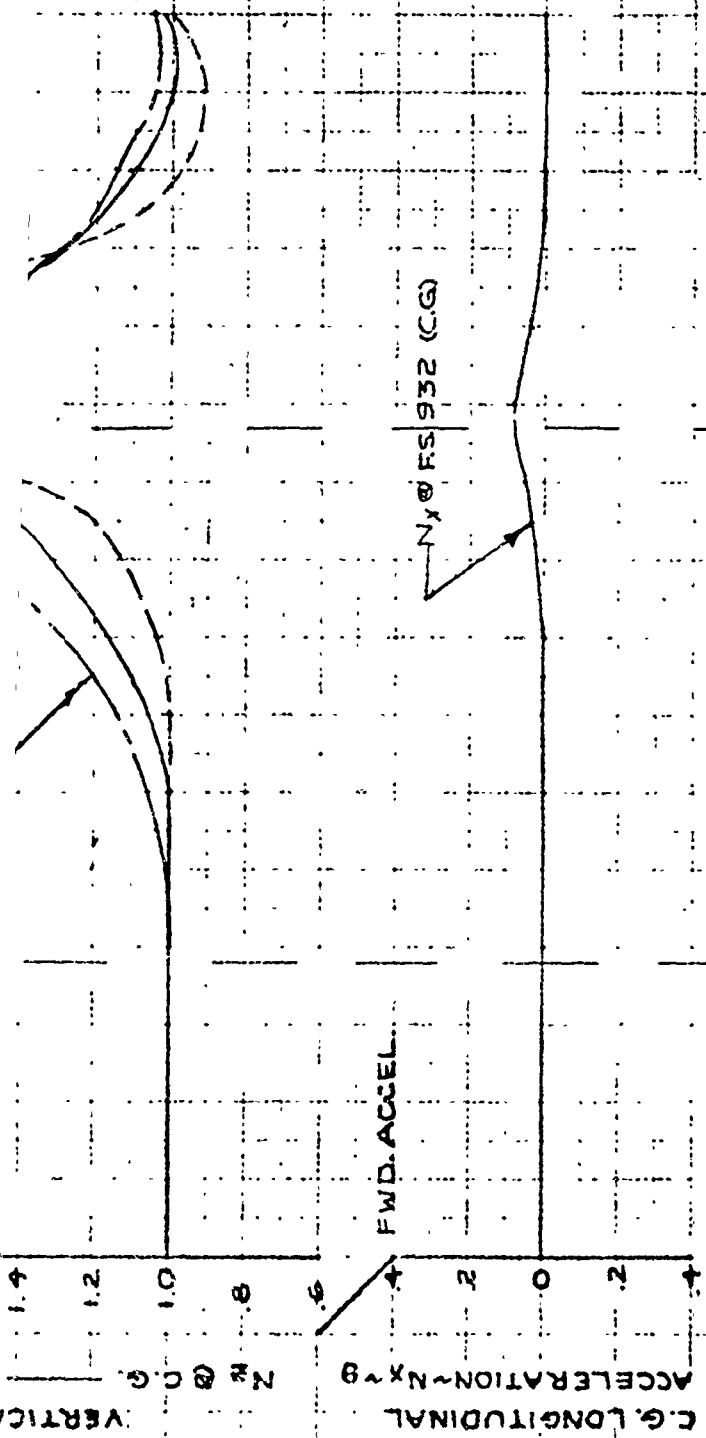


FIGURE D-15C

6008
 ADS 730

6008
ADS73D

JOB NO ADS 23 SUB CODE 1.2

LOAD C.G. POSITION - FUS. STA.

LOAD ACCELERATION

g's

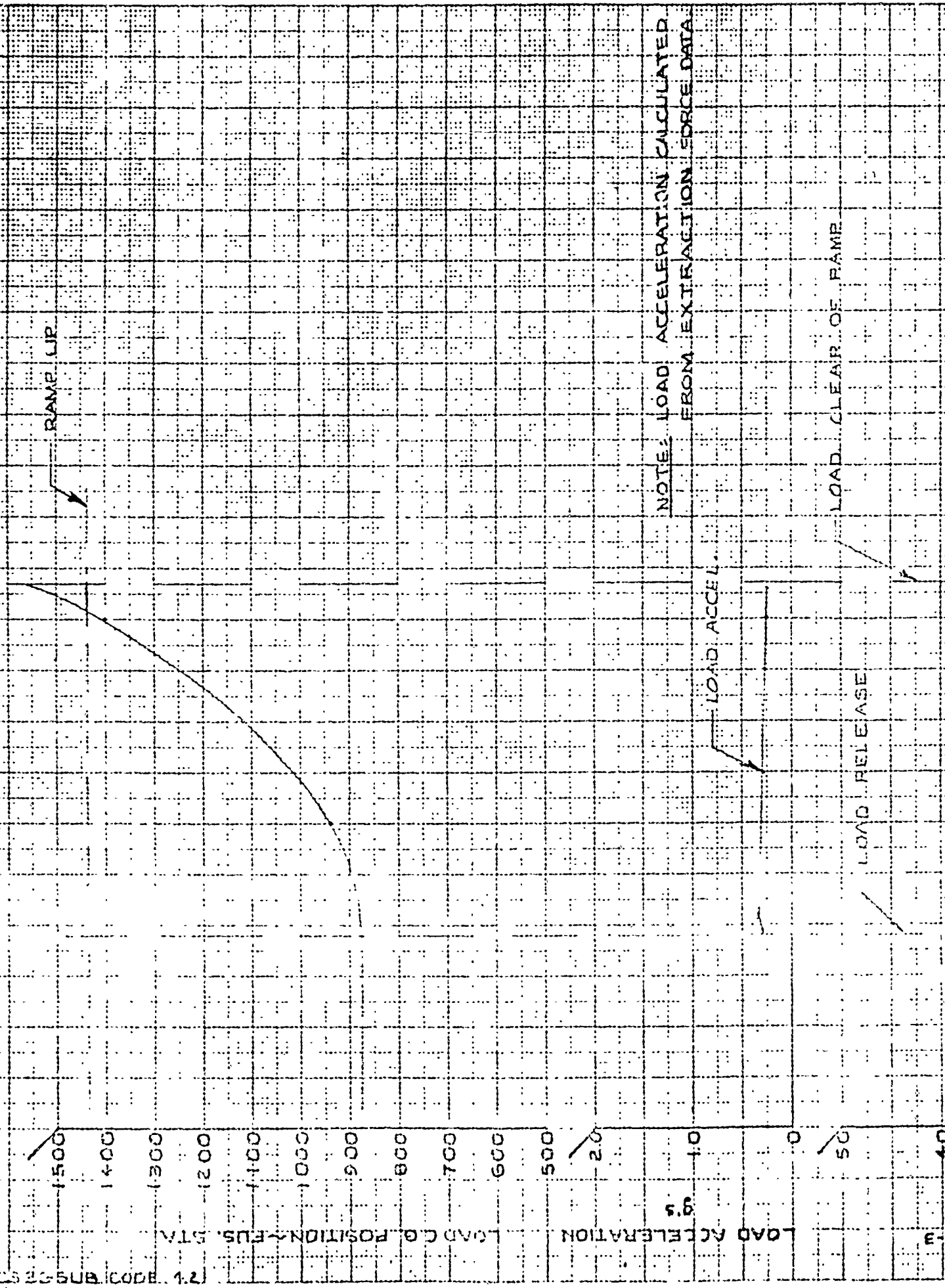
RAMP UP

LOAD ACCEL.

LOAD CLEAR OF RAMP

LOAD RELEASE

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA



TIME HISTORY OF AERIAL DELIVERY
MANEUVERMODEL C-119A
AF 63-8077 LAC 6008
TEST DATE 5-4-66
FLIGHT ~ 118 DROP NO. 15

SHEET 4 OF 7

CARGO WT. 27930 LBS.

NOTE:
SEE FIGURE 1, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

EXTRACTION FORCE

ELAPSED TIME - SEC

EXTRACTION FORCE $\times 10^3$

600

ADS. 700

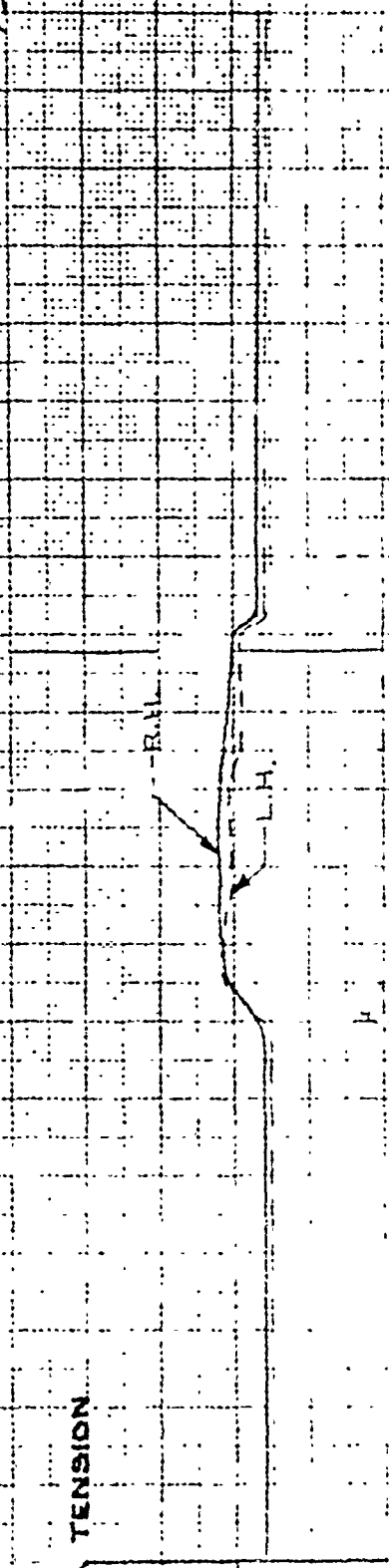
6008-ADS
73E

JOB NO. ADS 326 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

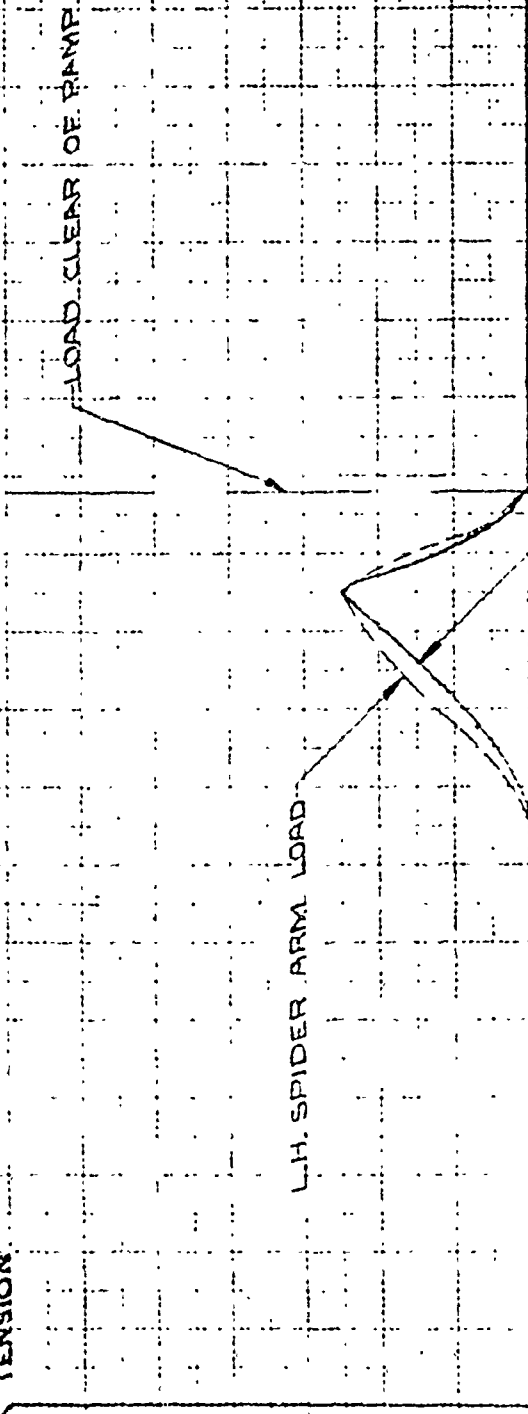
TENSION



ADS LINK AXIAL LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

TENSION

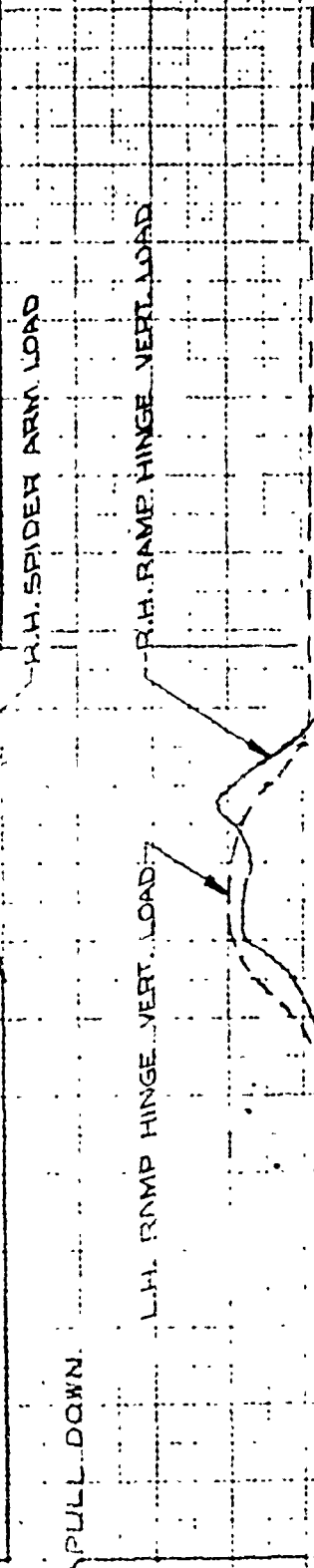


L.H. SPIDER ARM LOAD

VERTICAL LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

PULL DOWN

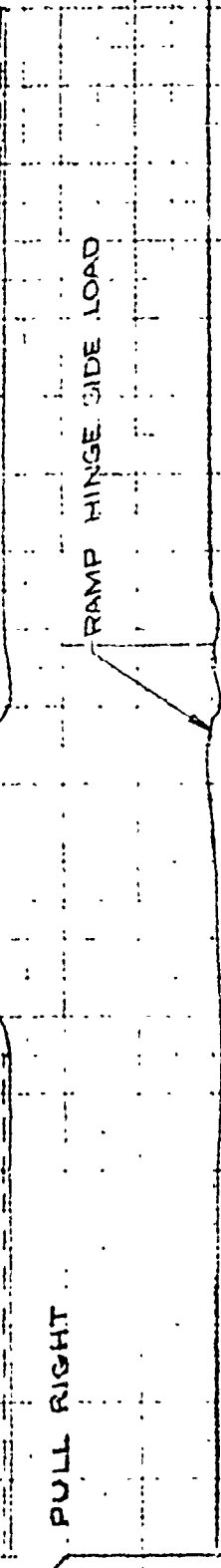


L.H. RAMP HINGE VERT. LOAD

RAMP HINGE SIDE LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

PULL RIGHT



RAMP HINGE SIDE LOAD

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 5-5-65

FLIGHT ~ 118

DROP NO. 15

SHEET 5 OF 7

CARGO WT. 27,980 LBS

NOTE:
SEE FIGURE 2-5A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

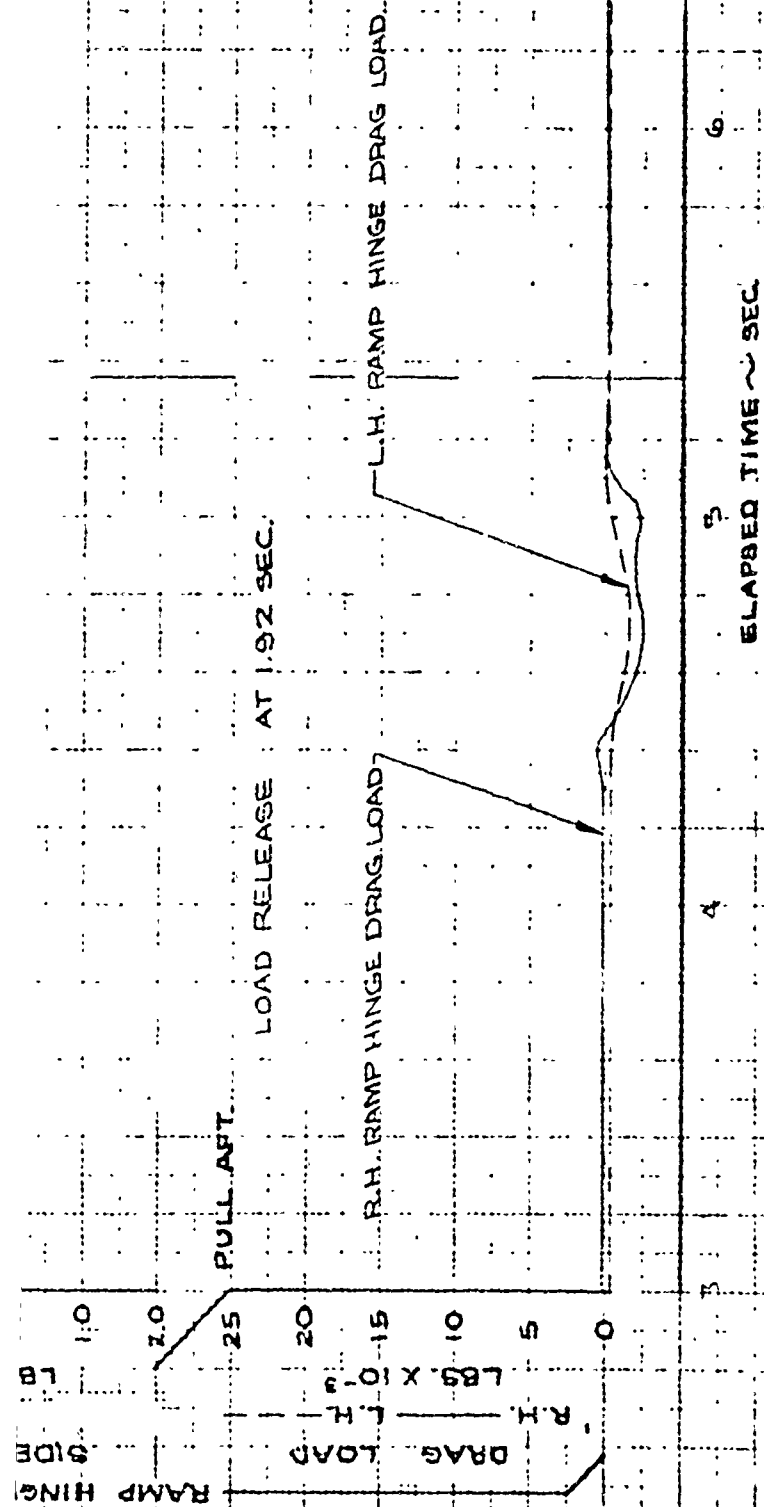
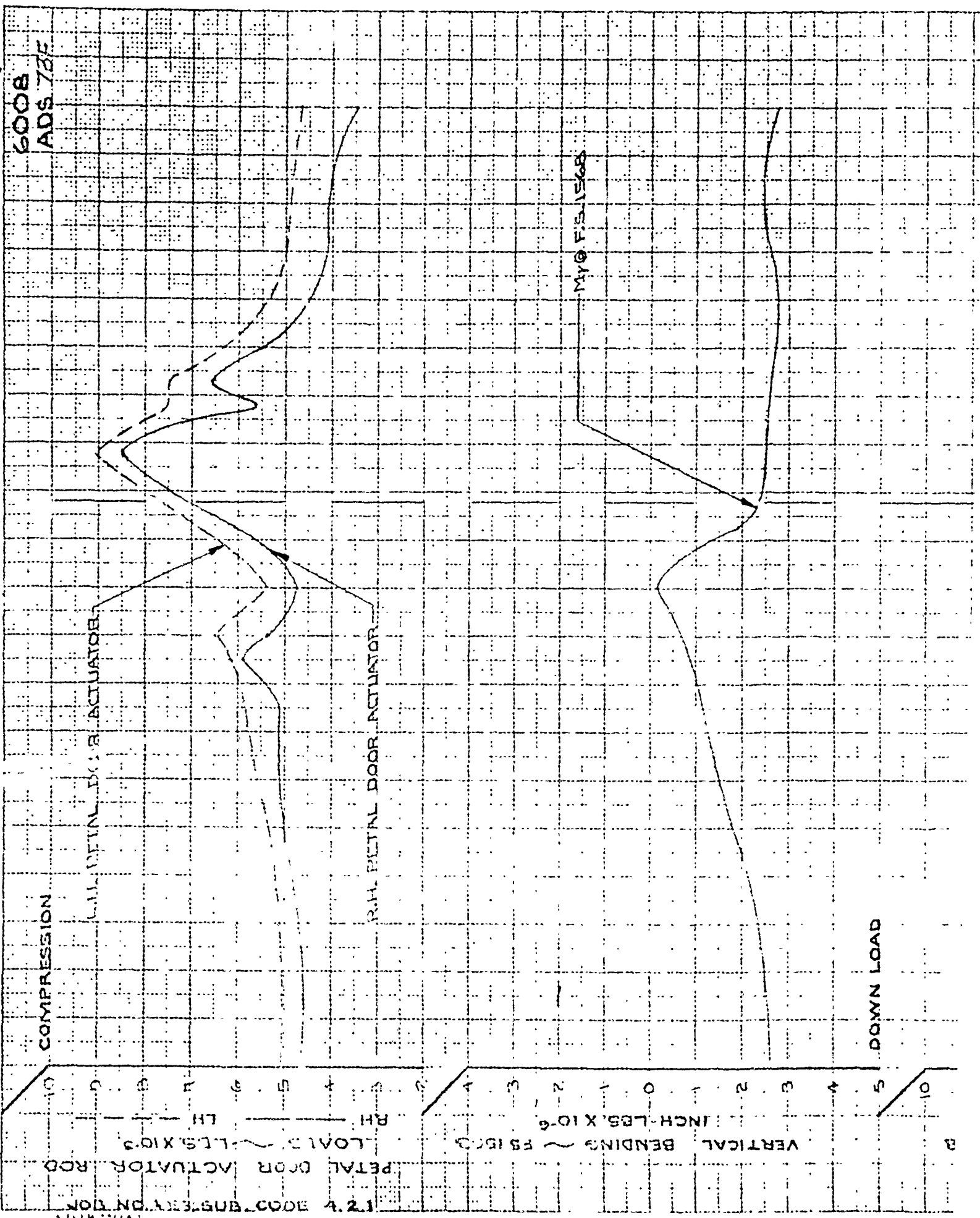


FIGURE 2-5E

6008
ADS-73E



PREPARED BY T.E.D.
 DATE 5-5-65
 CHECKED BY *[Signature]*

W. W. KNEED GEORGIA COMPANY
 AIRCRAFT DELIVERY DIVISION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-93

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
 AFG3-B077 LAC 6008
 TEST DATE: 5-5-65
 FLIGHT ~ 118 DROP NO 15

SHEET 6 OF 7

CARGO WT. 27,930 LBS

NOTE:
 SEE FIGURE D-15A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION AND EXTRACTION
 CHUTE DESCRIPTION.

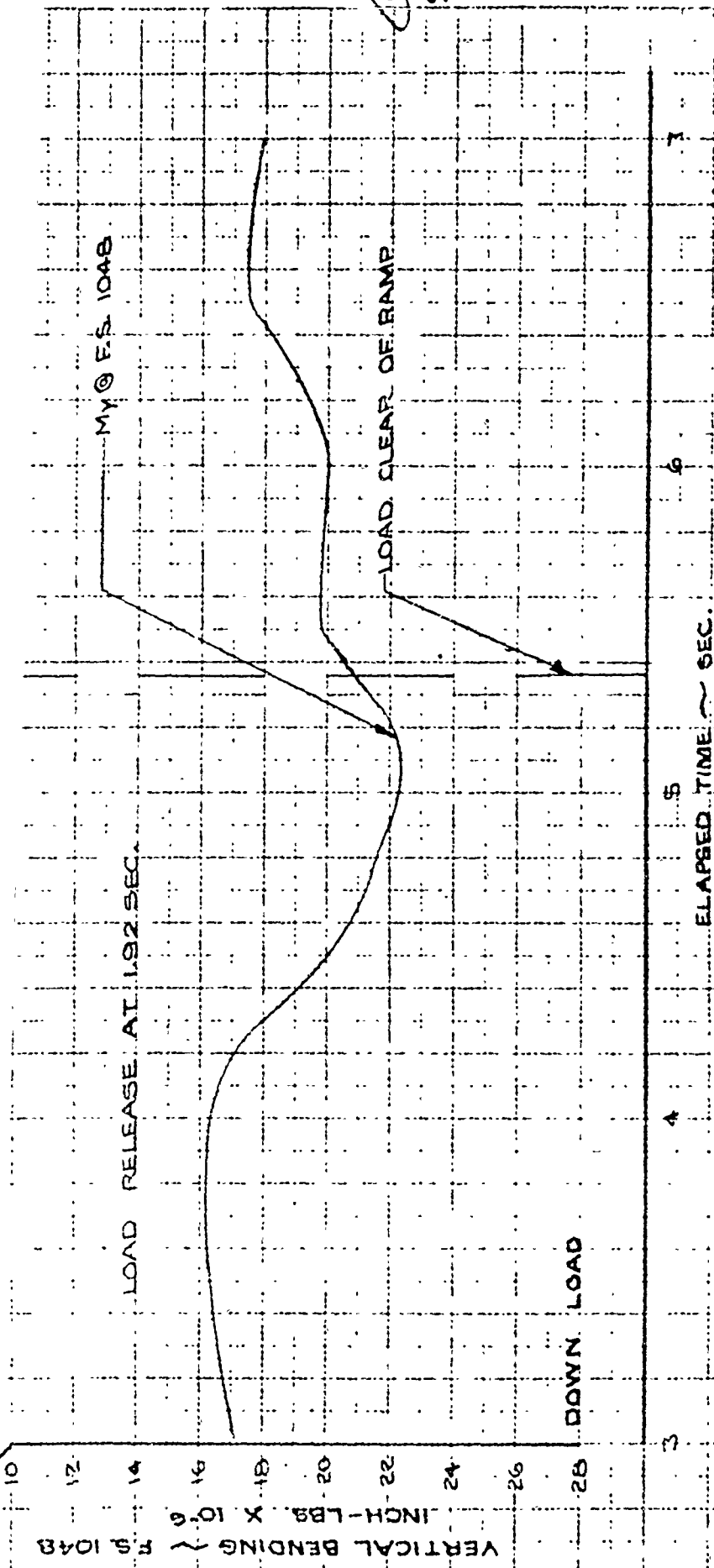


FIGURE D-15F

6008
 ADS. 73F

6008
ADS 73G

UP LOAD

SHEAR @ HBL 44L ~ 9.2
LBS X 10⁻³

HORIZONTAL STABILIZER NET LOADS

JOB NO. ADS 3808. CODE 4.2.1

S_E @ HBL 44L

UP LOAD

BENDING @ HBL 44L ~ M_x
INCH - LBS X 10⁻⁶

M_x @ HBL 44L

LOAD LEFT @ VS TIP

LOADS
M_x

M_x @ NSS 345

PREPARED BY TED
 DATE 5-5-68
 INITIALS JWP

TIME HISTORY OF AERIAL DELIVERY
 MANEUVER

ER 5473
 C-141A
 D-94

MODEL C-141A
 AF63-B077 LAC 6008
 TEST DATE: 5-4-68
 FLIGHT ~118 DROP NO. 15
 SHEET 7 OF 7
 CARGO WT. 27,930 LBS

NOTE:
 SEE FIGURE D-15A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

LOAD CLEAR OF RAMP

ELAPSED TIME ~ SEC.

LOAD RELEASE AT 1.92 SEC.

FIGURE D-15G

6008
 ADS 73G

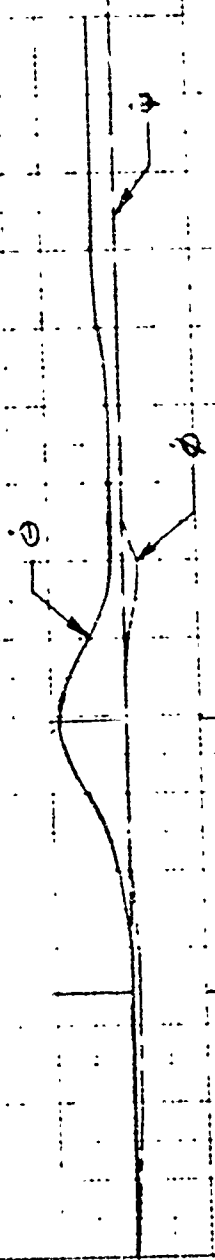
VERTICAL STABILIZER NET LOAD
 BENDING @ VSS 345 ~ MT
 ~ INCH-LBS X 10⁻⁶

6008
ADS 74A

NOSE UP
NOSE LEFT
RIGHT ROLL

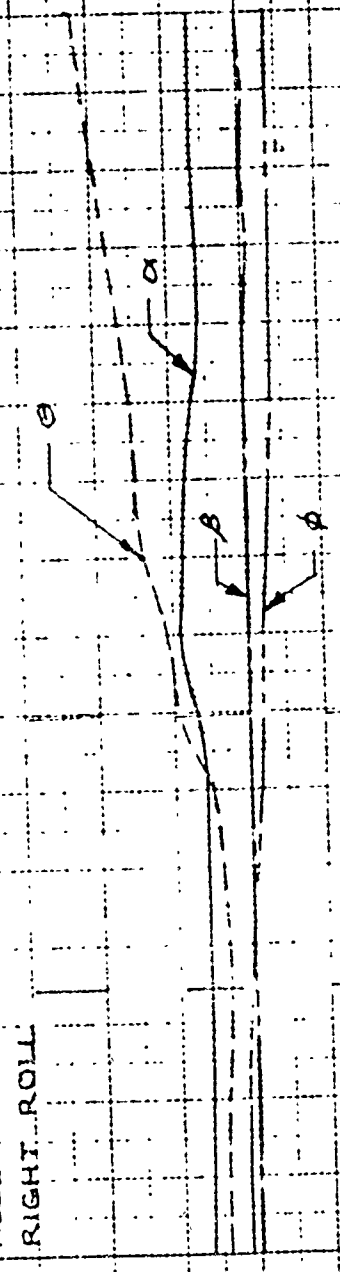
AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

JOB NO. 37 SUB. CODE 4.21



NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDES ~ DEG.



LOAD RELEASE

PREPARED BY RSA
 DATE 5-6-65
 CHECKED BY HWT

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE D-95

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838Q77 LAC 600B

TEST DATE 5-5-65

FLIGHT ~119

DROP NO. ~16

SHEET 1 OF 7

CARGO WT. 29,250 LBS

FLYING CONDITIONS

1. G.W. ~188,200 LBS
2. C.G. PRIOR TO DROP ~26.3 % MAC
3. C.G. AFTER DROP ~29.8 % MAC
4. FLAPS ~67 %
5. GEAR ~UP
6. AVG. EPR ~1.26 (4 ENGINES)
7. α_H ~1.7 DEG (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~PLATFORM
2. LENGTH ~24 FT
3. CARGO C.G. POSITIONS
LONG. ~F5879
VERT. ~WL 180

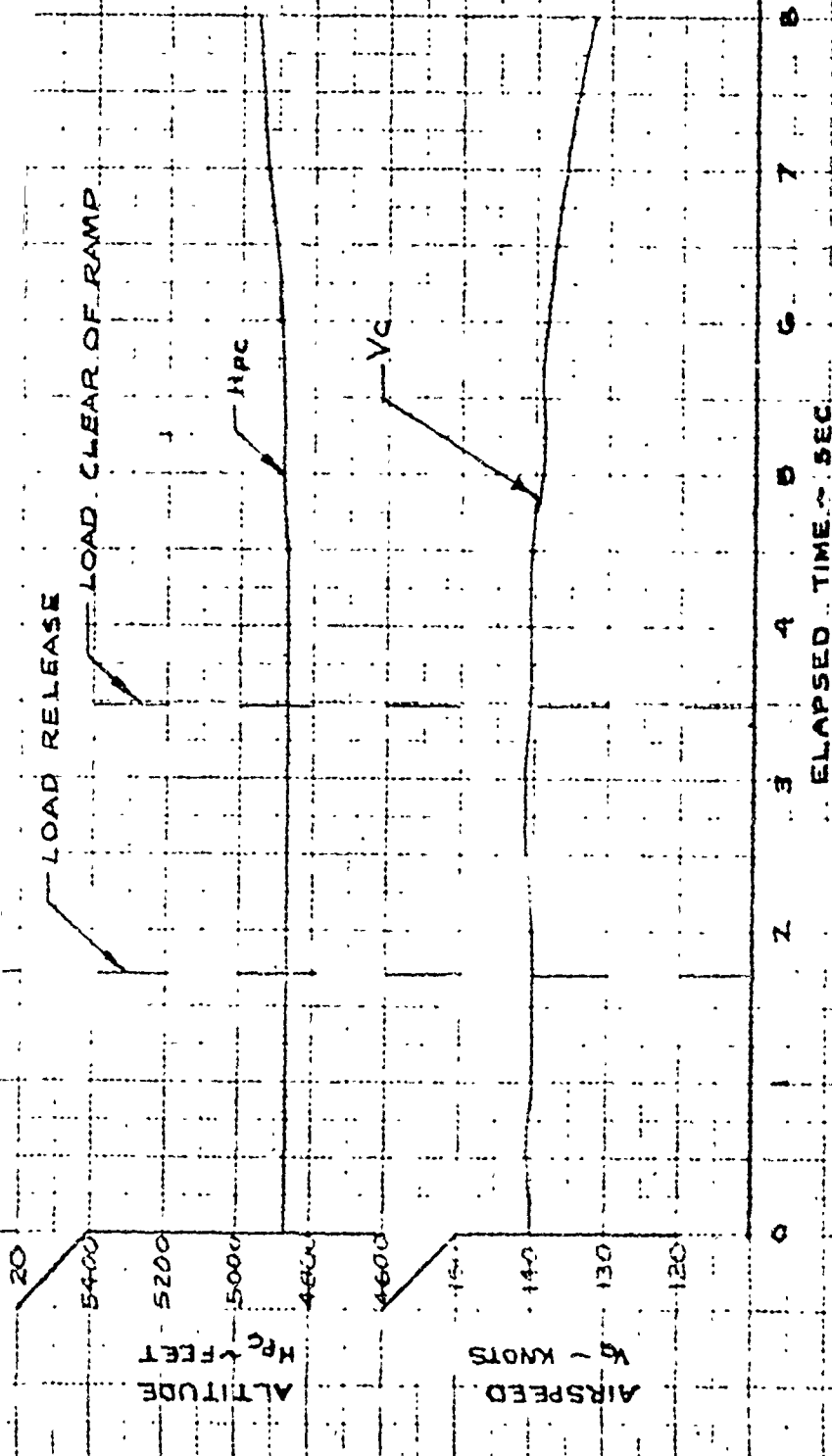
EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~2
2. CHUTE SIZE ~28 FT
3. RATED CHUTE FORCE/CARGO WT. ~1.3
4. EXTRACTION LINE LENGTH ~100 FT

FIGURE D-10A

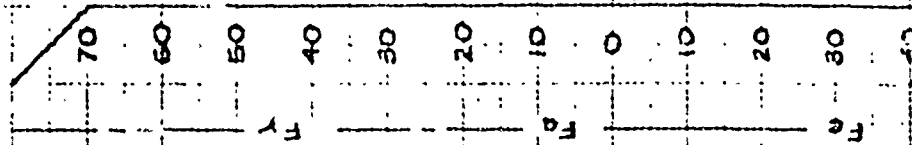
600B
 ADS 74A

REVISED
 12-14-65
 HAW



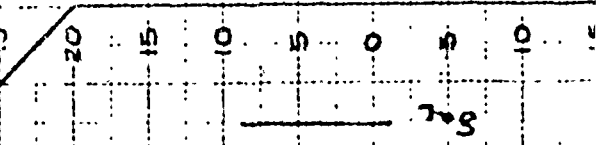
6008
ADS 74B

RIGHT ROLL
PUSH LEFT
PULL



CONTROL FORCES ~ LBS.

T.E. UP



LEFTAILERON POSITION ~ DEG.

JOB NO. 37 SUB. CODE 4.21

PREPARED BY
DATE
CHECKED BY

RSA

5-6-65

JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORP. BOSTON

REPORT NO. ER 5473
MODEL C-141A
PAGE D-26

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63.8077

LAC 6008

TEST DATE ~ 5-5-65

FLIGHT ~ 119

DROP NO ~ 16

SHEET 2 OF 7

CARGO WT 29,250 LBS

NOTE:
SEE FIGURED SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

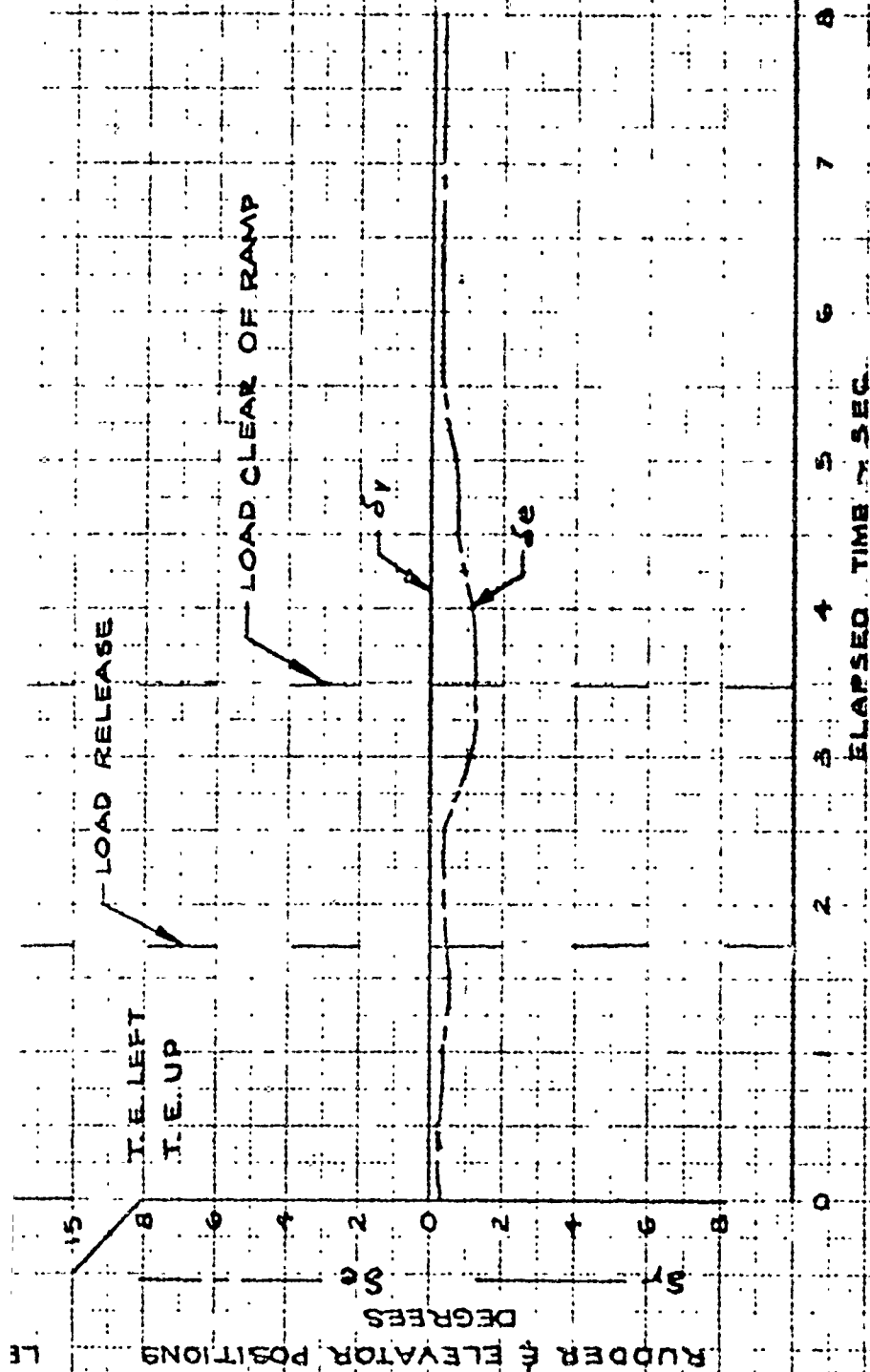


FIGURE D-CB

6008
ADS 74 B

6008
ADB-74C

JOB NO. 37 SUB CODE 4.2.1

PITCHING ACCELERATION

DEG/SEC²

NOSE UP

40
20
0
20
40

NOTE:

θ CALCULATED FROM N_z DATA.

θ

UP ACCEL

3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6

LOAD RELEASE

LOAD CLEAR OF RAMP

N_z @ FS 1637

N_z @ FS 277

N_z @ FS 932 (C.G.)

AL ACCELERATIONS ~ 9

N_z @ FS 277

N_z @ FS 1637

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 6008

TEST DATE: 5-5-65

FLIGHT ~119

DROP NO ~16

SHEET 3 OF 7

CARGO WT. 29,250 LBS

NOTE:

SEE FIGURE D-16C SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

0

2

3

4

5

6

7

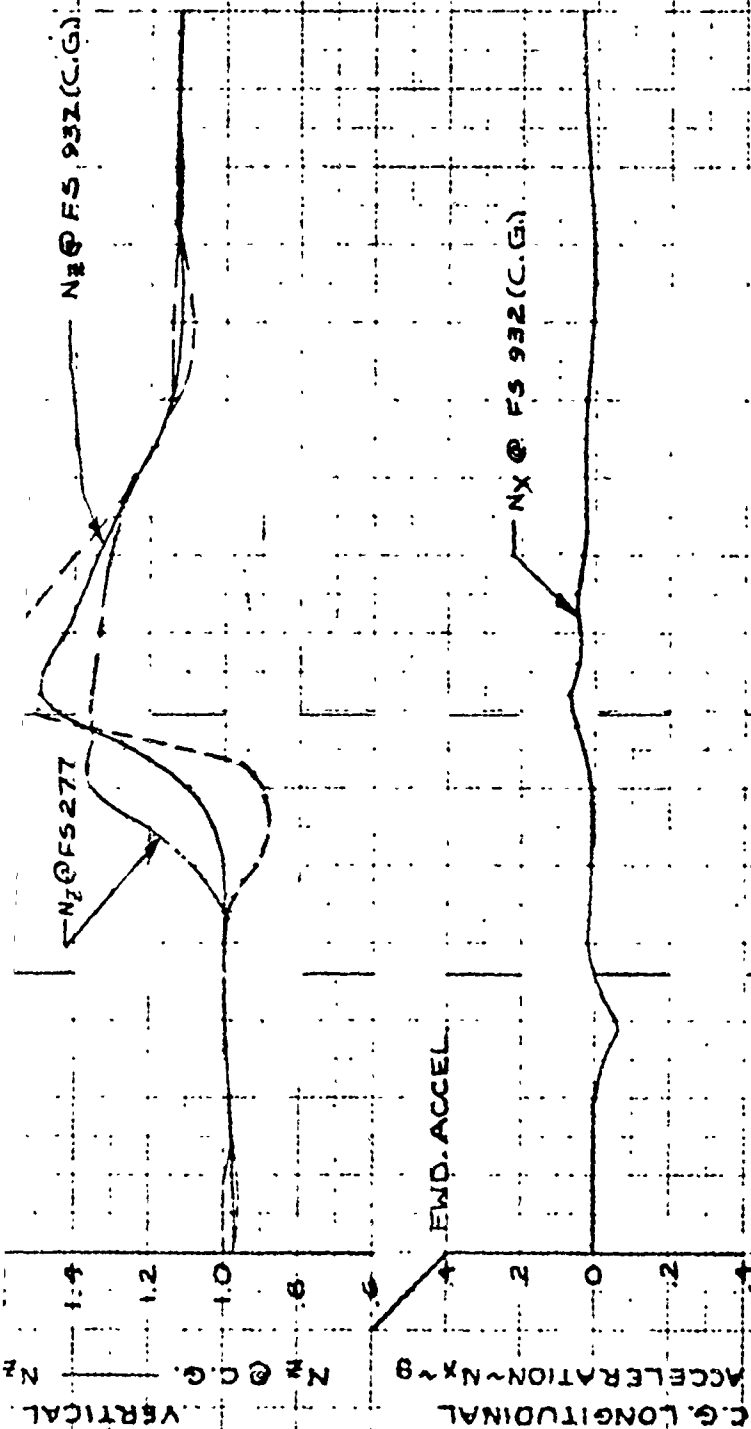
8

9

10

FIGURE D-16C

6008
ADS-74 C



6008
ADS74D

JOB NO. 37 SUB CODE 4.2 (74 B003 B09 42 ON B01



TIME HISTORY

MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE ~ 5-5-65

FLIGHT ~ 119

DROP NO. ~ 16

SHEET 4 OF 7

CARGO WT. 29,250 LBS

NOTE:

SEE FIGURE C-16A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

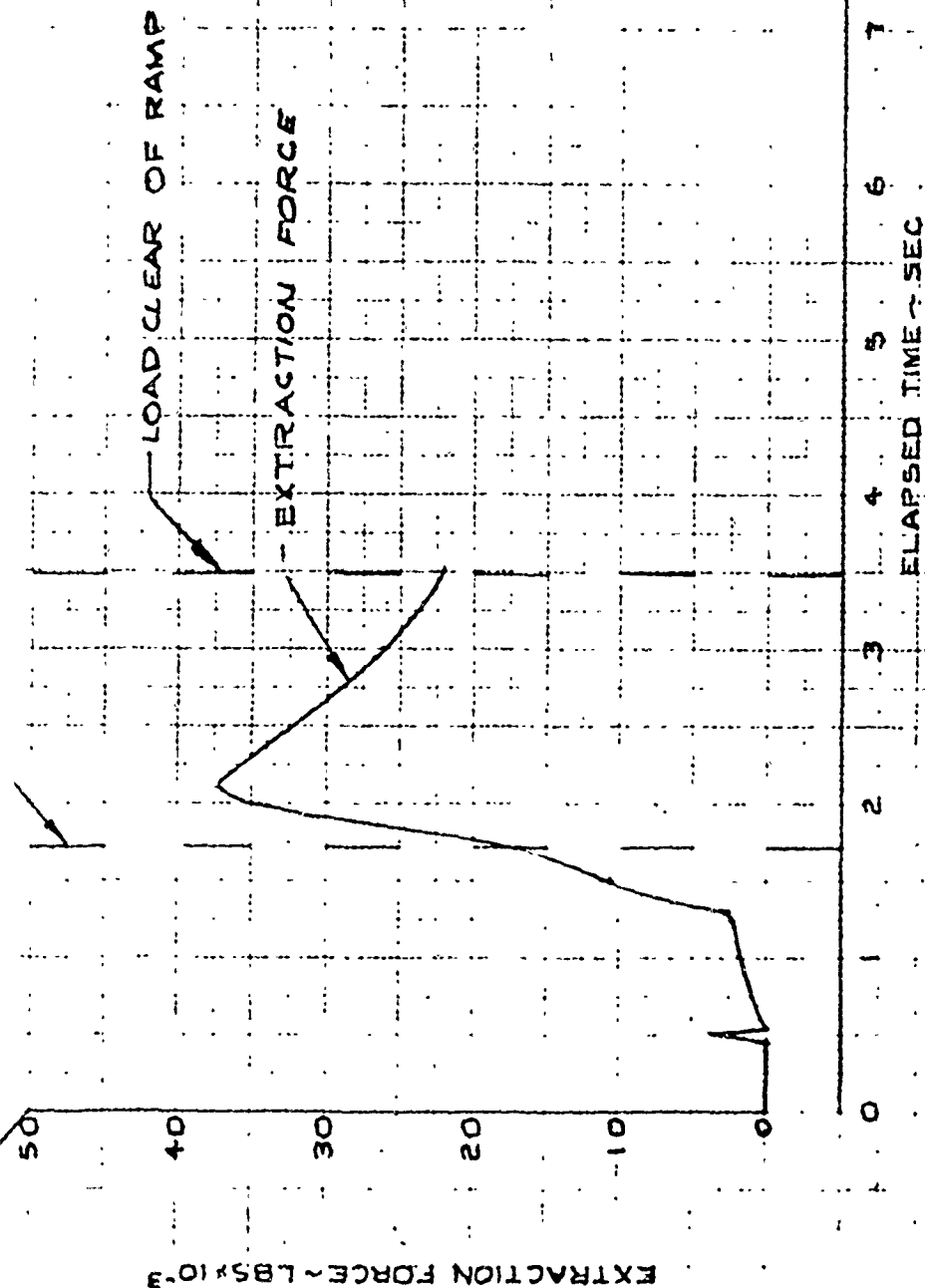
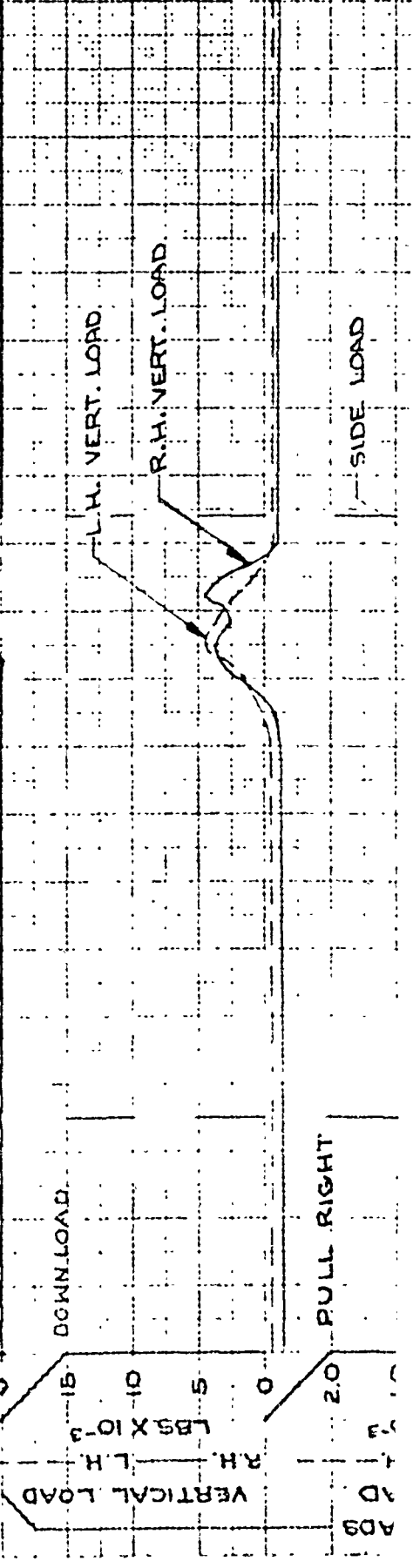
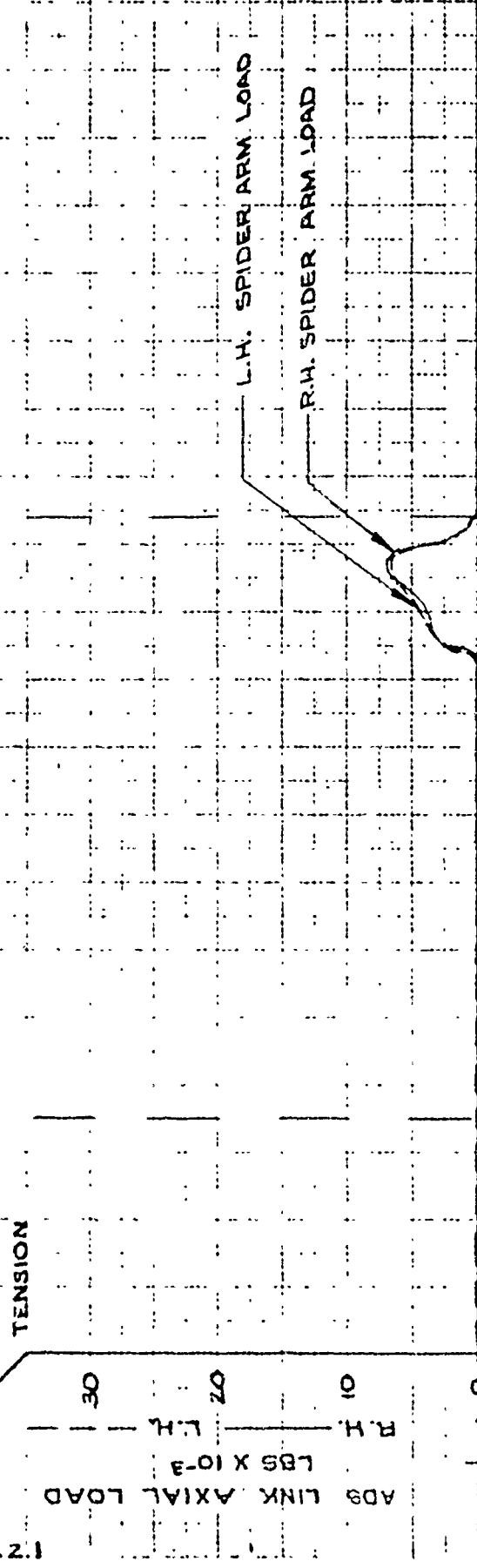
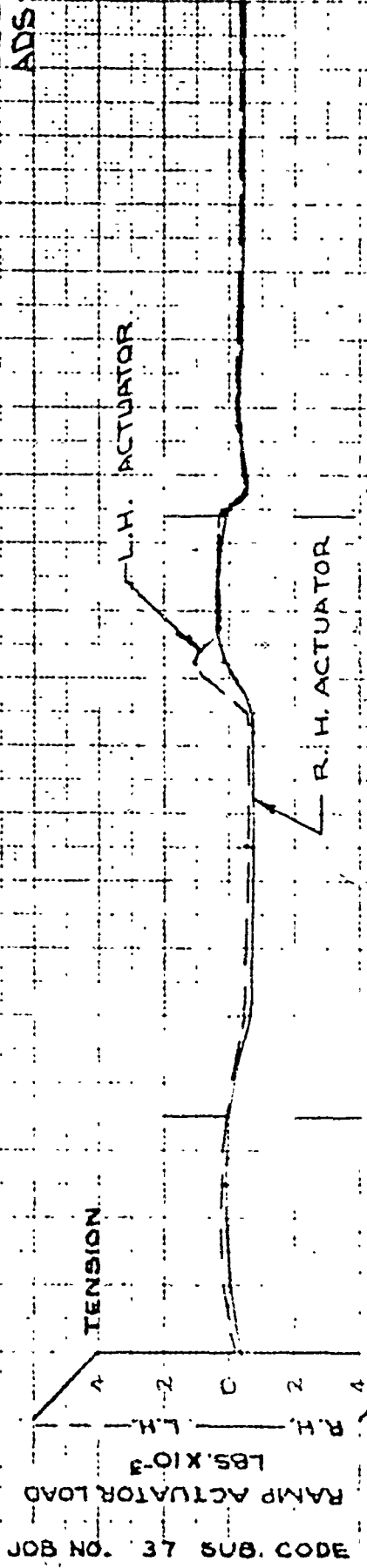


FIGURE C-16D

6008

ADS 74 D

6008
ADS-74E



JOB NO. 37 SUB. CODE 4.2.1

PREPARED BY TED
 DATE 5-6-63
 CHECKED BY JWS

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-99

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF 63-8077 LAC 6008
 TEST DATE 5-5-63
 FLIGHT 119 DROP NO. 16

SHEET 5 OF 7

CARGO WT 29,250 LBS

NOTE:
 SEE FIGURE 2-6 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

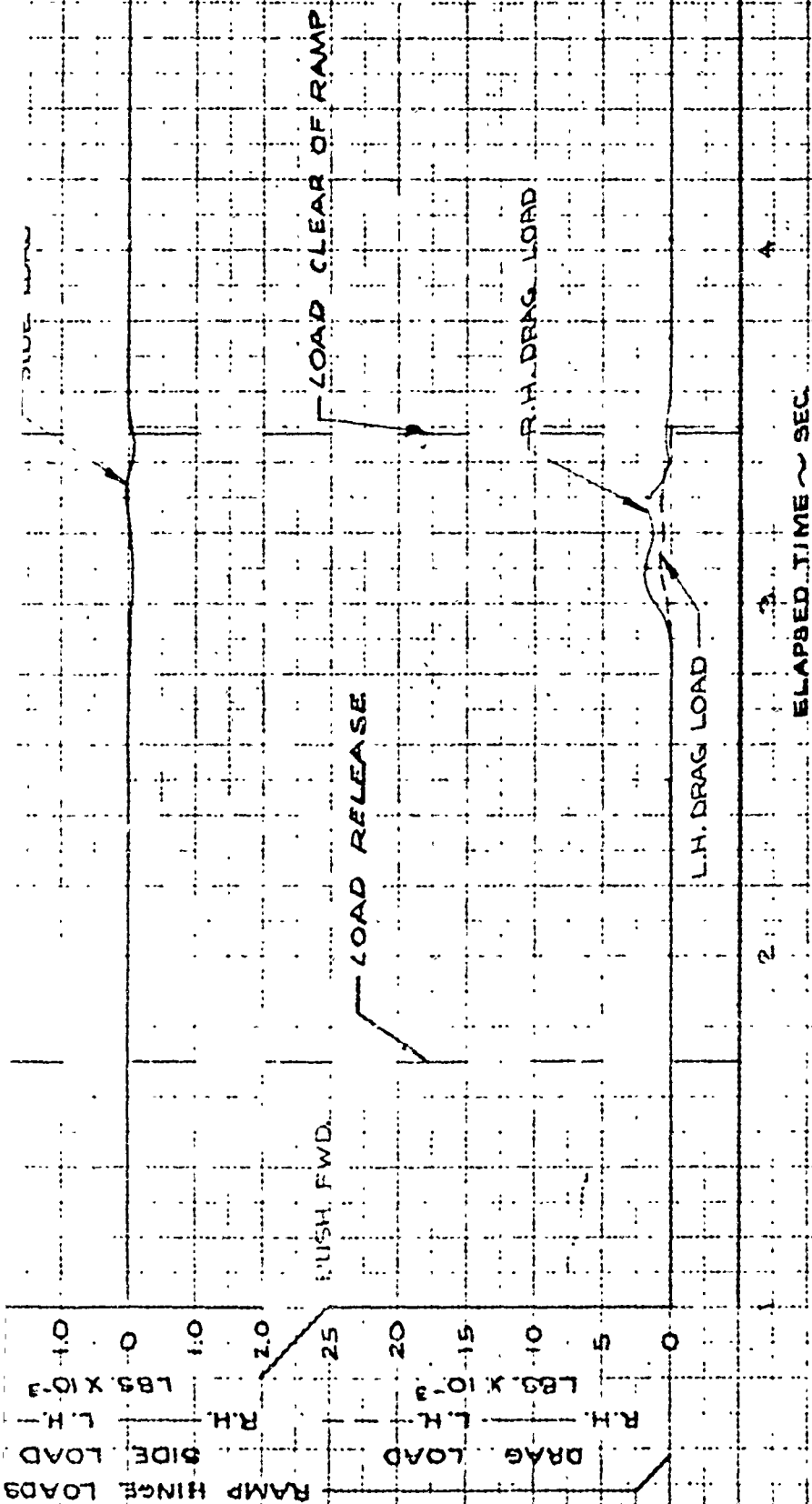


FIGURE 2-6

6008
 ADG-4

6008
ADS-74F



PREPARED BY TED
DATE 5-6-65
CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-100

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-B077 LAC 6008
TEST DATE 5-5-65
FLIGHT 119 DROP NO 16
SHEET 6 OF 7
CARGO WT. 29,250 LBS

NOTE:
SEE FIGURE 16 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

LOAD CLEAR OF RAMP

LOAD RELEASE

5.0

4.0

3.0

2.0

1.0

ELAPSED TIME ~ SEC.

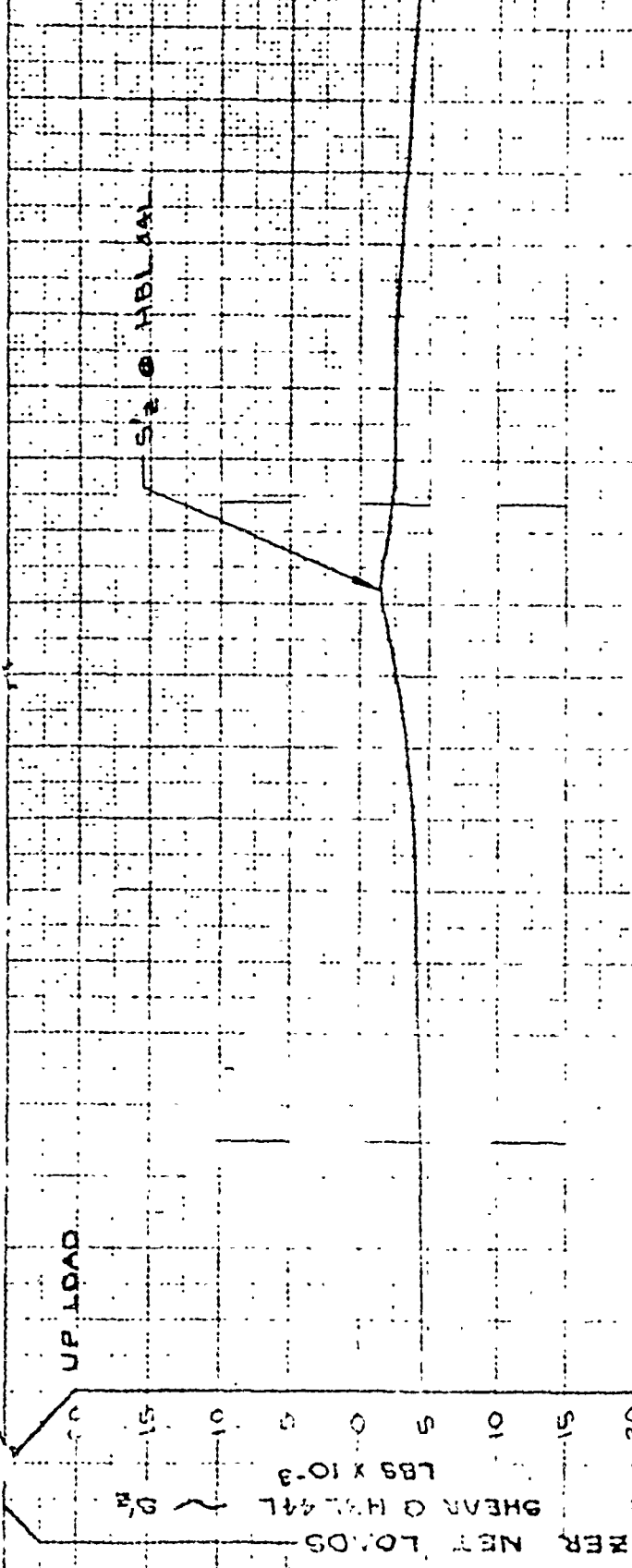
DOWN LOAD

VERTICAL BENDING ~ F.S. 104B
INCH-LBS. X 10⁻⁶

FIGURE D-16F

6008
ADS-74E

008
DS-745



$\sqrt{M'} @ VSS 345.$

PREPARED BY TED
DATE 5-6-65
REVIEWED BY *[Signature]*

REPORT NO ER 5473
MODEL C-141A
PAGE D-101

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE: 5-5-65
FLIGHT 119 DROP NO. 16
SHEET 1 OF 7
CARGO WT. 29,250 LBS

NOTE:
SEE FIGURE D-16 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

5

4

3

2

1

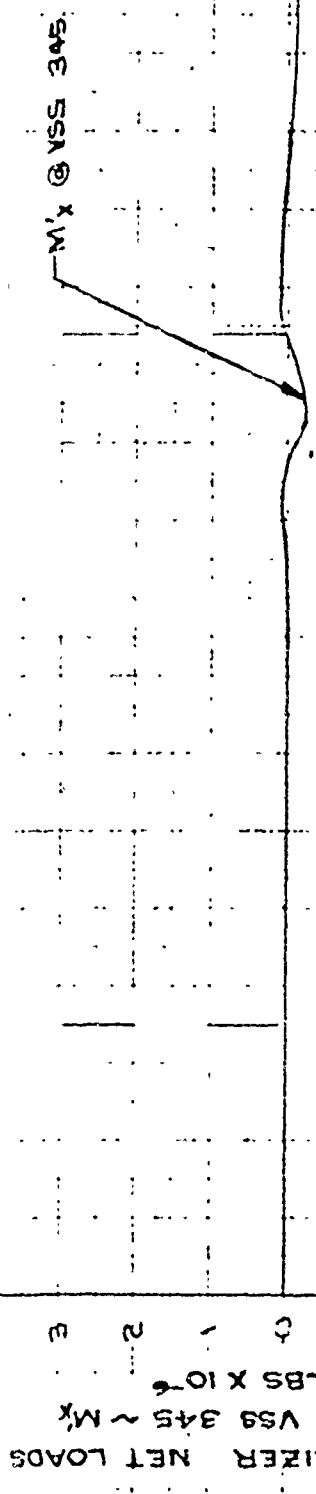
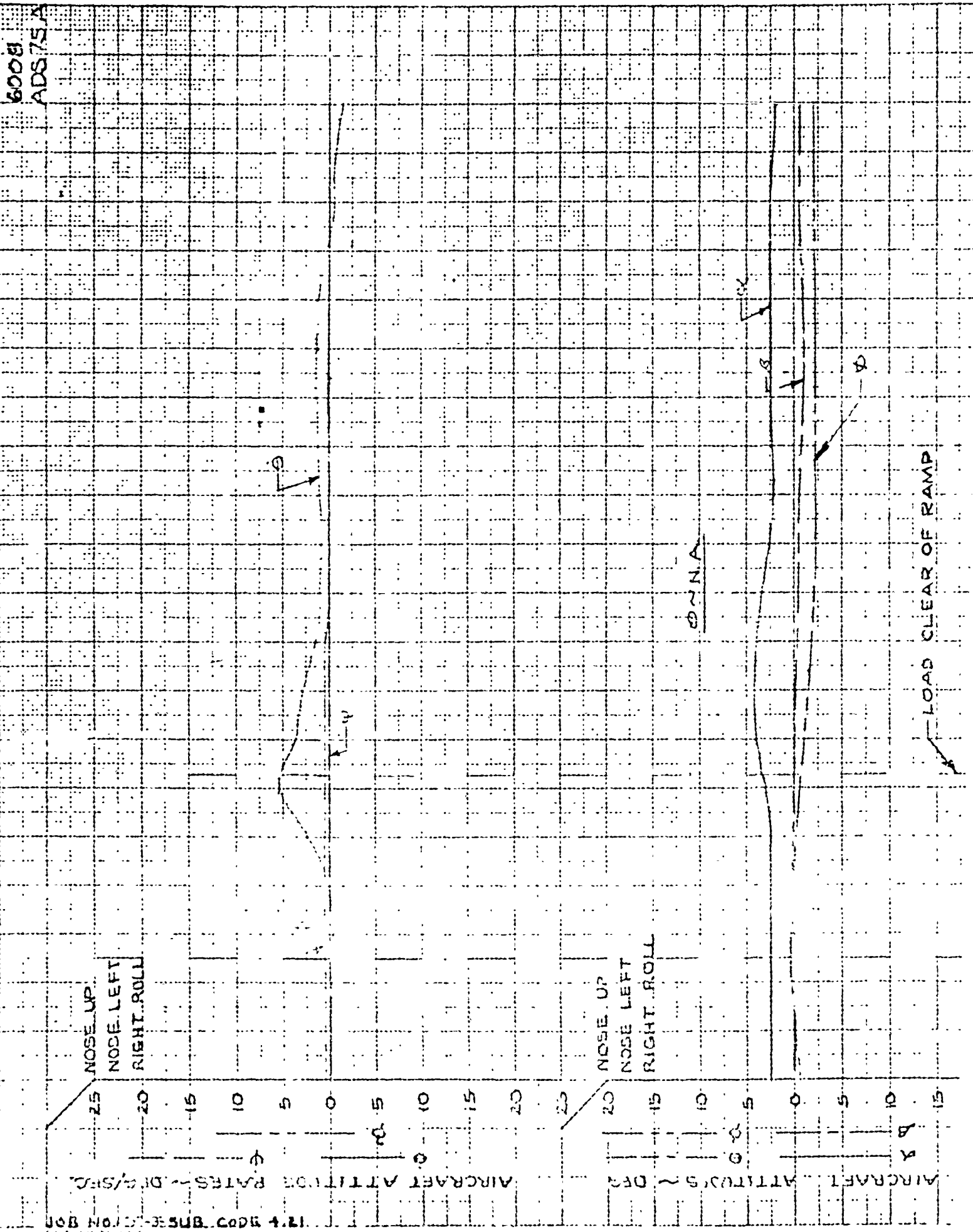


FIGURE D-6G

6008
ADS-74G

6008
ADS 75A



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF332077 LAC 600B
 TEST DATE - 5-6-65
 FLIGHT 120 DROP NO. 17

SHEET 1 OF 7

CARGO WT. 32,030 LBS

RUN CONDITIONS

1. G.W. 191,600 LBS
2. C.G. PRIOR TO DROP ~ 25.9 % MAC
3. C.G. AFTER DROP ~ 29.8 % MAC
4. FLAPS ~ 67 %
5. GEAR ~ UP
6. AVG. EPR 1.30
7. γ_H ~ 1.5 DEG (A/C N.O.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 268 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3 S77
 VERT. ~ WL 101

EXTRACTION CHUTE DESCRIPTION

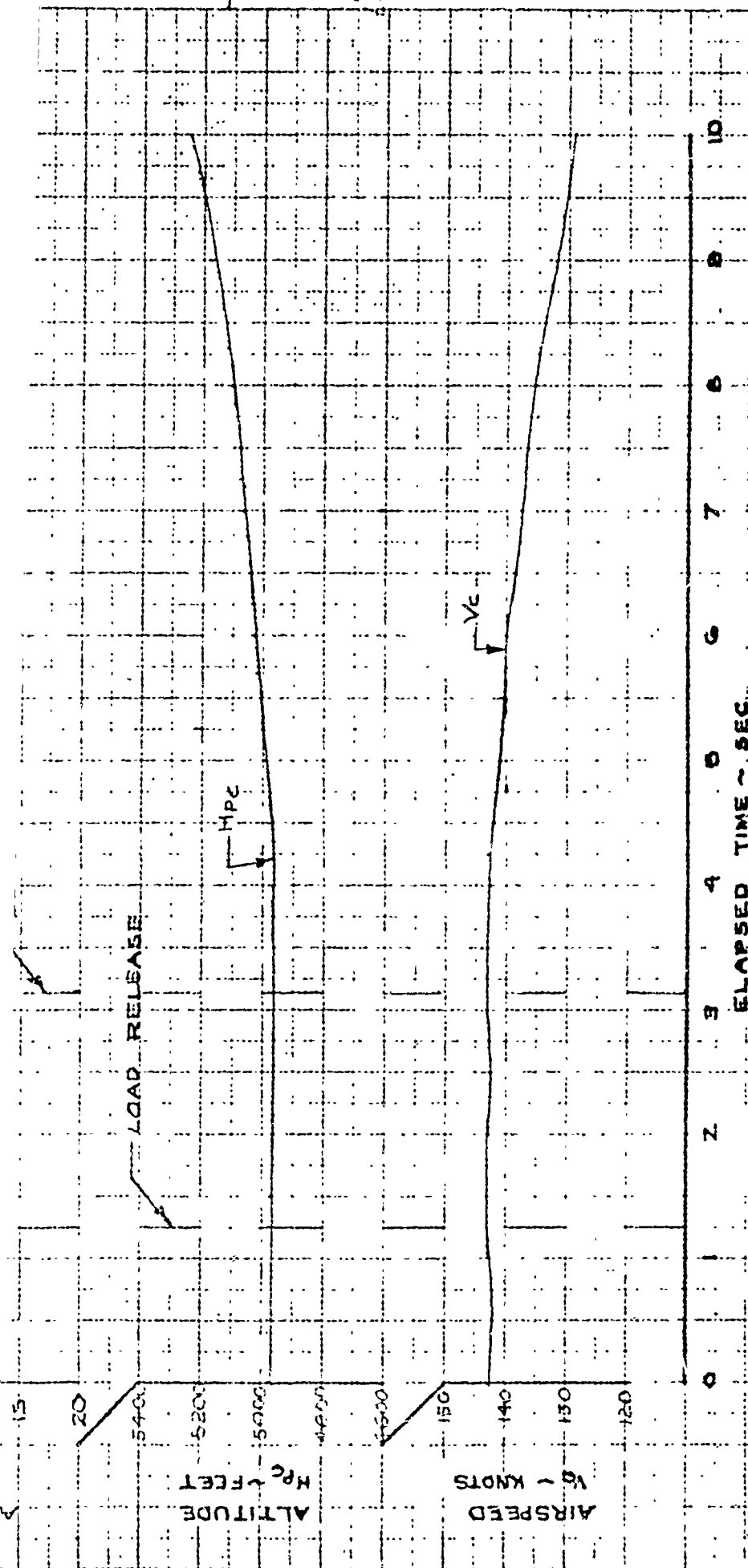
1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 26 FT
3. RATED CHUTE FORCE / CARGO WT. ~ 119
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE D-17A

600B

ADS 75A

REVISED 12-14-65 MBH



6008
ADS 75B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

F_y

F_x

CONTROL FORCES ~ LBS.

JOB NO. 25 SUB. CODE 4.21

12.4.5003 BNS

ON BOARD

F_{y1}
 F_{x1}

F_x

TELEUP

20
15
10
5
0

S_{al}

EST AILERON POSITION ~ DEG

S_{al}



CHECKED BY *HPD*

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-119A LAC 6008
AF 63 8077

TEST DATE
FLIGHT 120 DROP NO 17

SHEET 2 OF 7

CARGO WT 32,030 LBS

NOTE:
SEE FIGURE 1 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

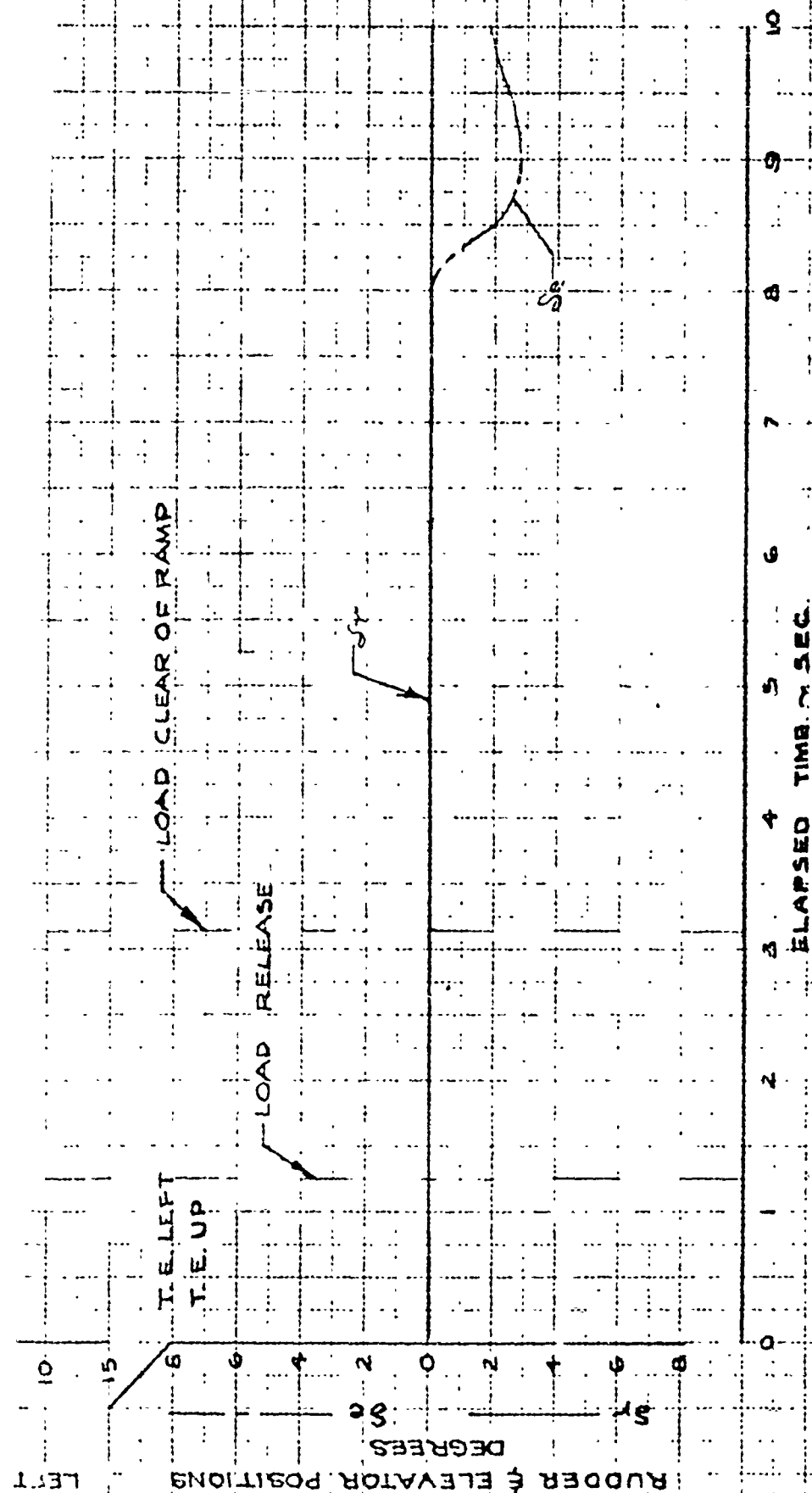


FIGURE D-17B

6008
ADS 75.3

6008
ADS-75C

JOB NO. 38

SUB. CODE 4.2.1

PITCHING ACCELERATION

DEG/SEC²

NOSE UP

40

20

0

20

40

UP ACCEL

3.0

2.8

2.6

2.4

2.2

2.0

1.8

1.6

ACCELERATIONS ~ 9

F.S. 277

N₂ F.S. 1637

N₂ @ F.S. 1637

N₂ @ F.S. @ F.S. 932 (C.G.)

N₂ @ F.S. @ F.S. 277

NOTE:

⑥ CALCULATED FROM N₂ DATA

MANEUVER

MODEL C141A
AFG3-B077 LAC 6008
TEST DATE 5-6-65
FLIGHT ~ 120 DROP NO ~ 17

SHEET 3 OF 7

CARGO WT. 32,030 LBS

NOTE:
SEE FIGURE 17, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

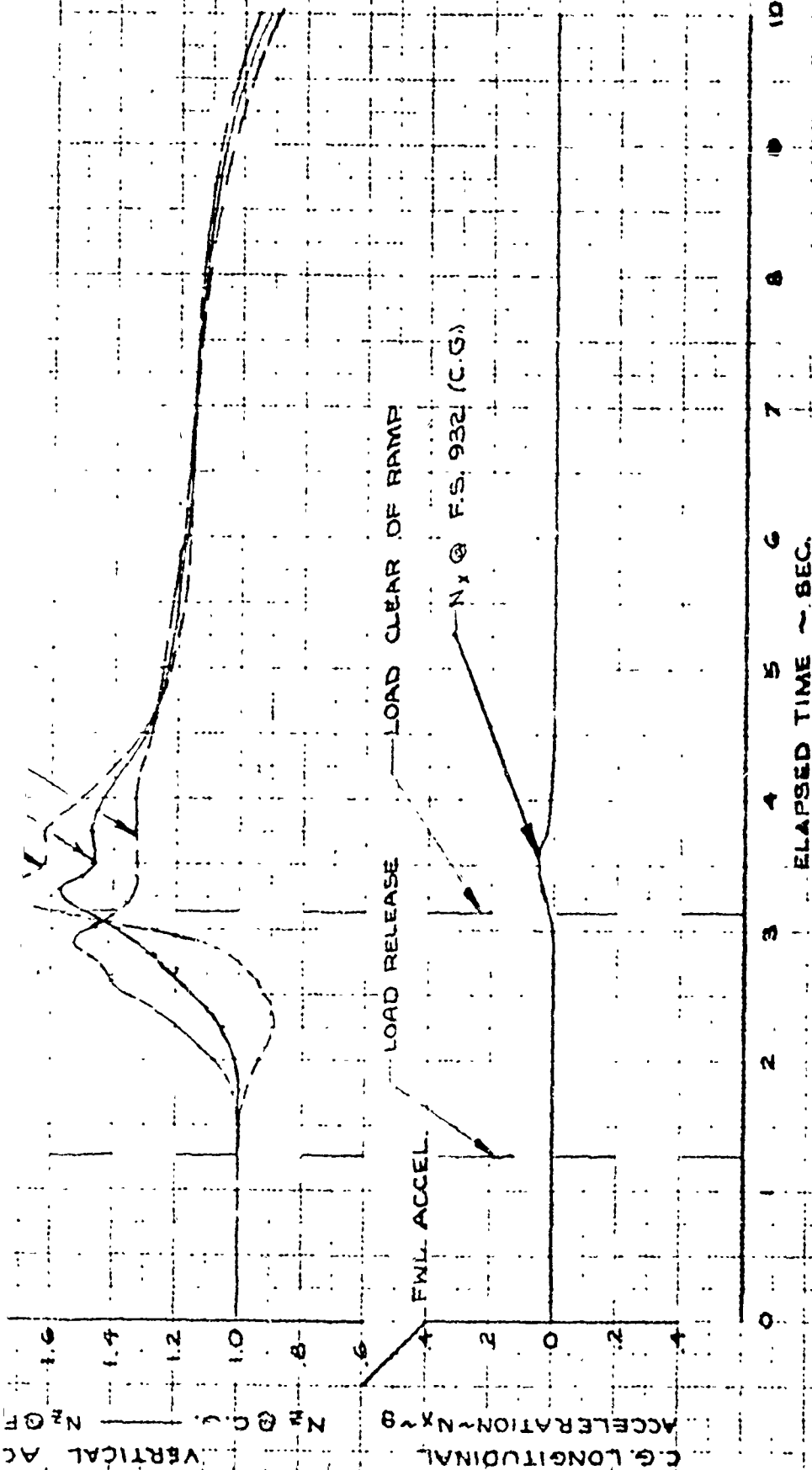
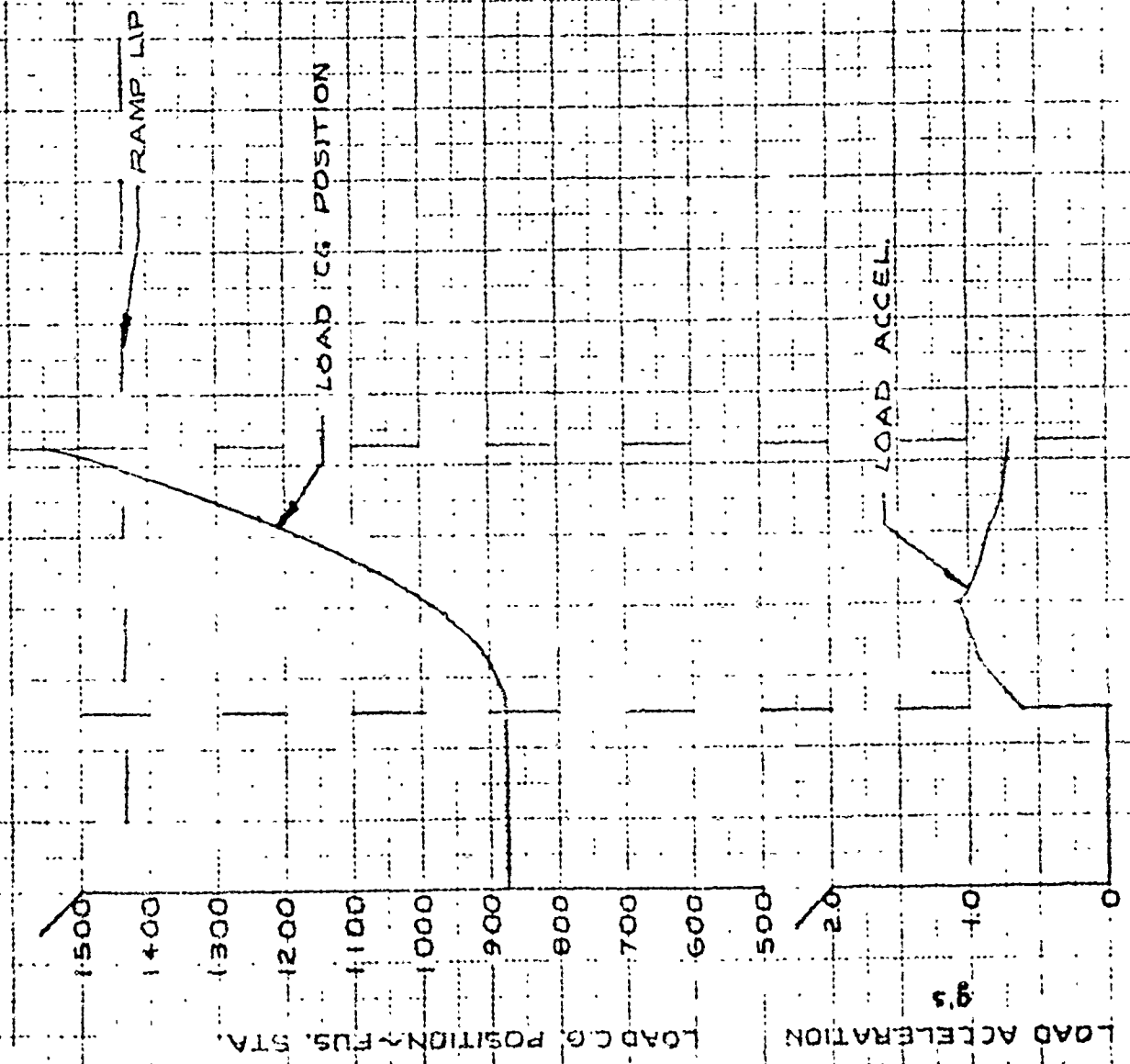


FIGURE 17C

6008
ADS-75C

6008
ADS75D

JOB NO. 139 SUB CODE 4.2



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

PREPARED BY RSA
DATE 5-7-65
CHECKED BY JMD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. BR 5473
MODEL C-141A
PAGE D-105

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE ~ 5-6-68

FLIGHT ~ 120 DROP NO. ~ 17

SHEET 4 OF 7

CARGO WT. 32,030 LBS.

NOTE:
SEE FIGURE 2-170, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

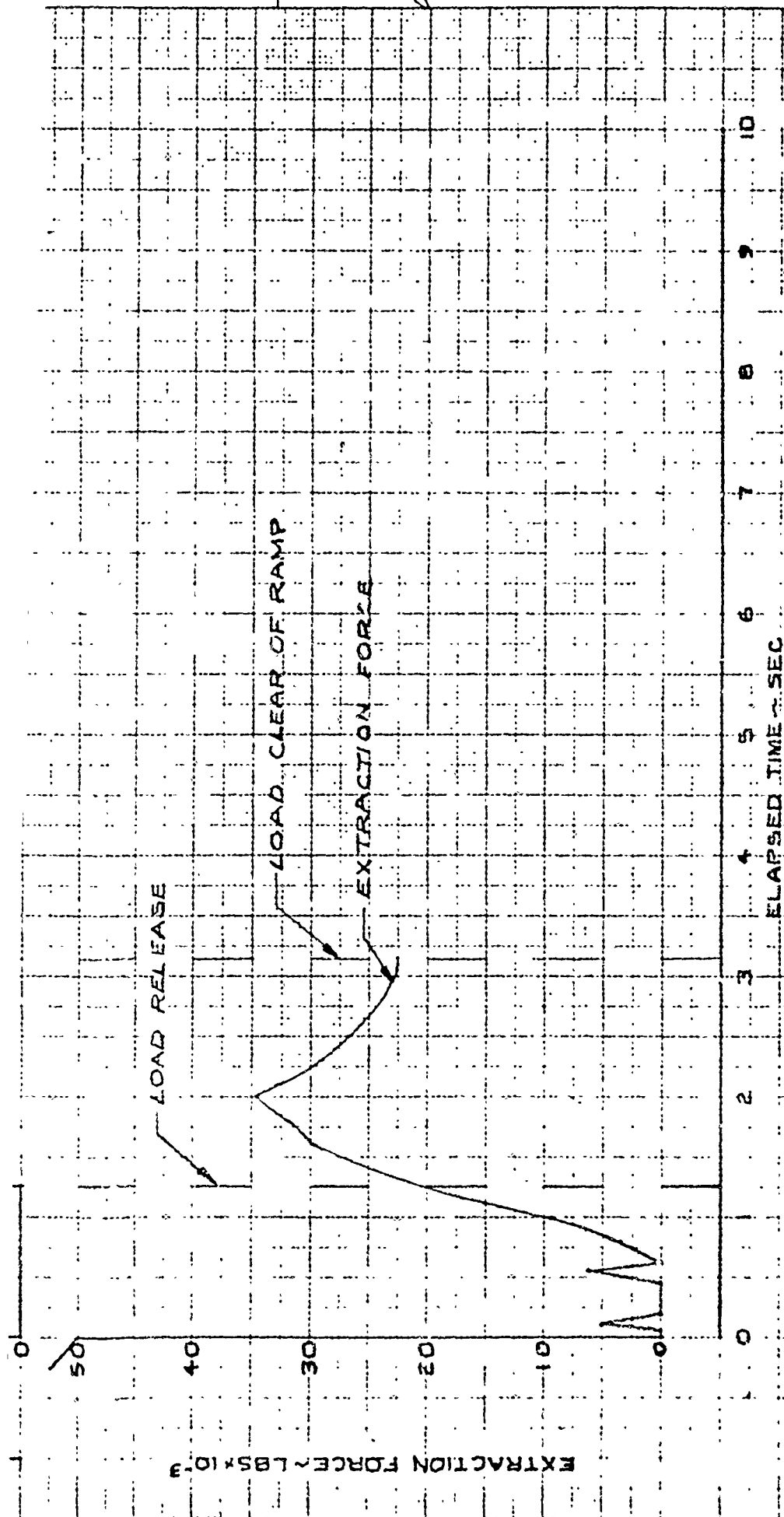
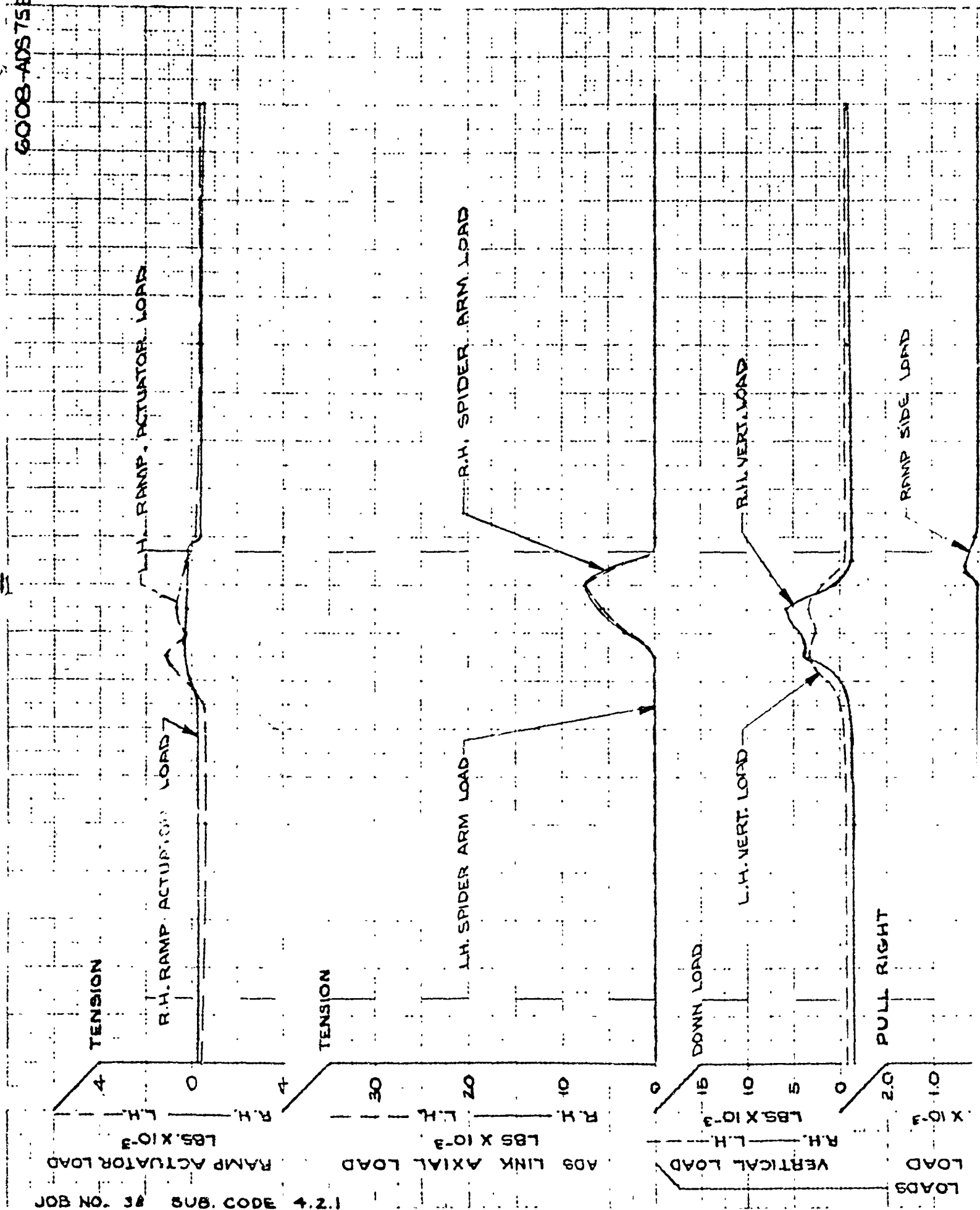


FIGURE 2-170

6008
ADS 75D

6008-ADS75E



JOB NO. 38 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD

ADS LINK AXIAL LOAD

VERTICAL LOAD

LOADS

PREPARED BY **TED**
 DATE **5-7-65**
 CHECKED **Hand**

ENGINEERED BY **INGIA COMPANY**
 ENGINEER **...**

REPORT NO. **FR 5473**
 MODEL **C-141A**
 PAGE **D-106**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
 AF 63-8077 LAC 6008
 TEST DATE: **5-6-65**
 FLIGHT **~120** DROP NO. **~17**

SHEET **5** OF **7**

CARGO WT **32,030 LBS.**

NOTE:
 SEE FIGURE D-7A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.
 5
 4
 3
 2

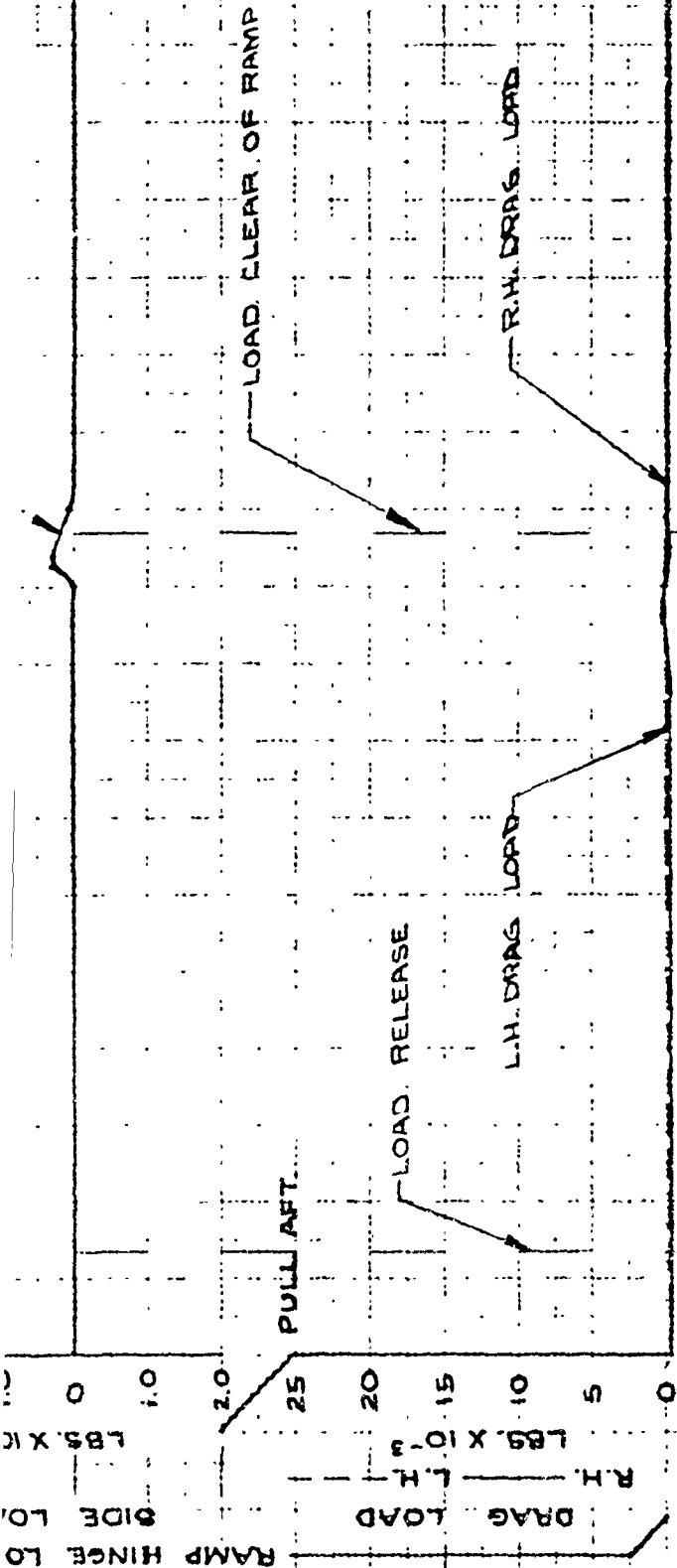


FIGURE D-17E

6008
 ADS-75E

6008
ADS-75 E

COMPRESSION

LN. PETAL DOOR ACTUATOR LOAD

RH. PETAL DOOR ACTUATOR LOAD

1.2.4. EOOD. SUB. CODE 4.2.1
JOB NO. 30
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH
LH

LOAD RELEASE

LOAD CLEAR OF RAMP

MYE ES 1565

VERTICAL BENDING ~ FS 1565

INCH-LBS. X 10⁻⁶

DOWN LOAD

PREPARED BY TED
DATE 5-7-65
CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY
AERONAUTICAL RESEARCH AND DEVELOPMENT

REPORT NO ER 5473
MODEL C-141A
PAGE D-107

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 5-6-65

FLIGHT ~ 120

DROP NO ~ 17

SHEET 6 OF 7

CARGO WT. 32,030 LBS.

NOTE:
SEE FIGURE D-17F SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

DOWN LOAD

VERTICAL BENDING ~ F.S. 1048

INCH-LBS. X 10⁻⁶

FIGURE D-17F

6008
ADS. 75 F

[illegible]

UP LOAD

20

6-01 x 687

9HEAR @ H-1 44L ~ 9,2

HORIZONTAL STABILIZER NET LOADS

JOB NO. 38 SUB. CODE 4.2.1

[illegible]

UNIVERSITY OF CALIFORNIA

UP LOAD

10

9-01 X 587 - HONI

BENDING @ H. 747 ~ M, W X

LOAD LEFT @ VS TIP

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 5-5-66

FLIGHT ~ 120

DROP NO. ~ 17

SHEET 7 OF 7CARGO WT. 32,030 LBS.

NOTE:

SEE FIGURE 1 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-17G

VERTICAL STABILIZER NET LOADS

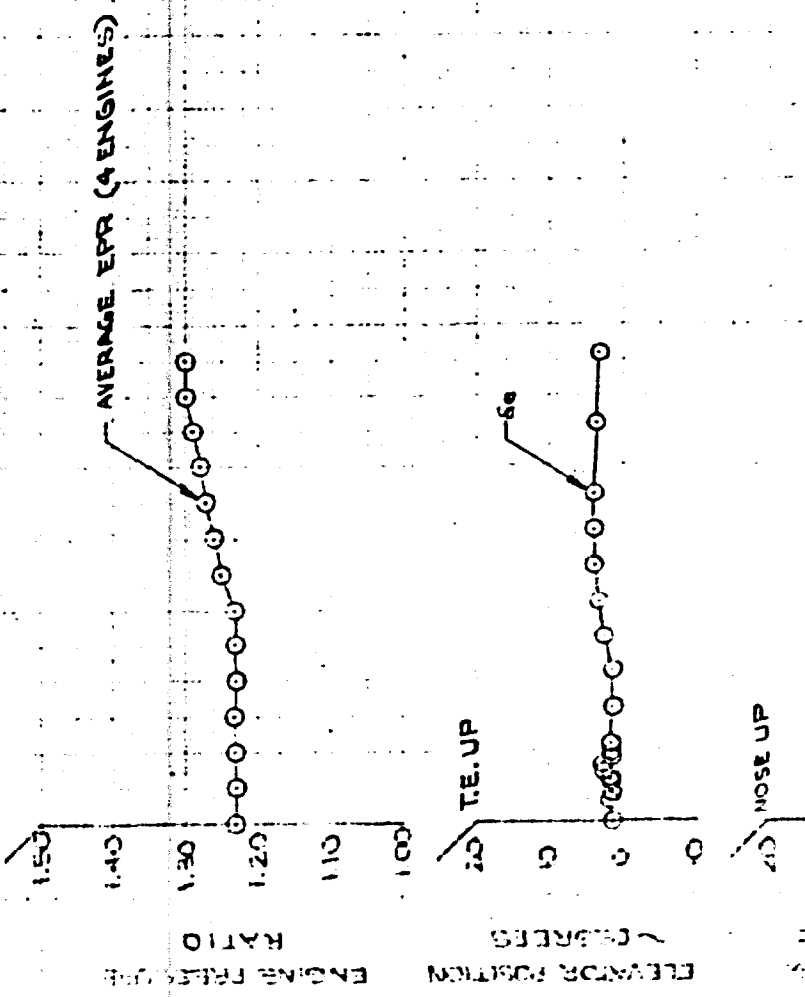
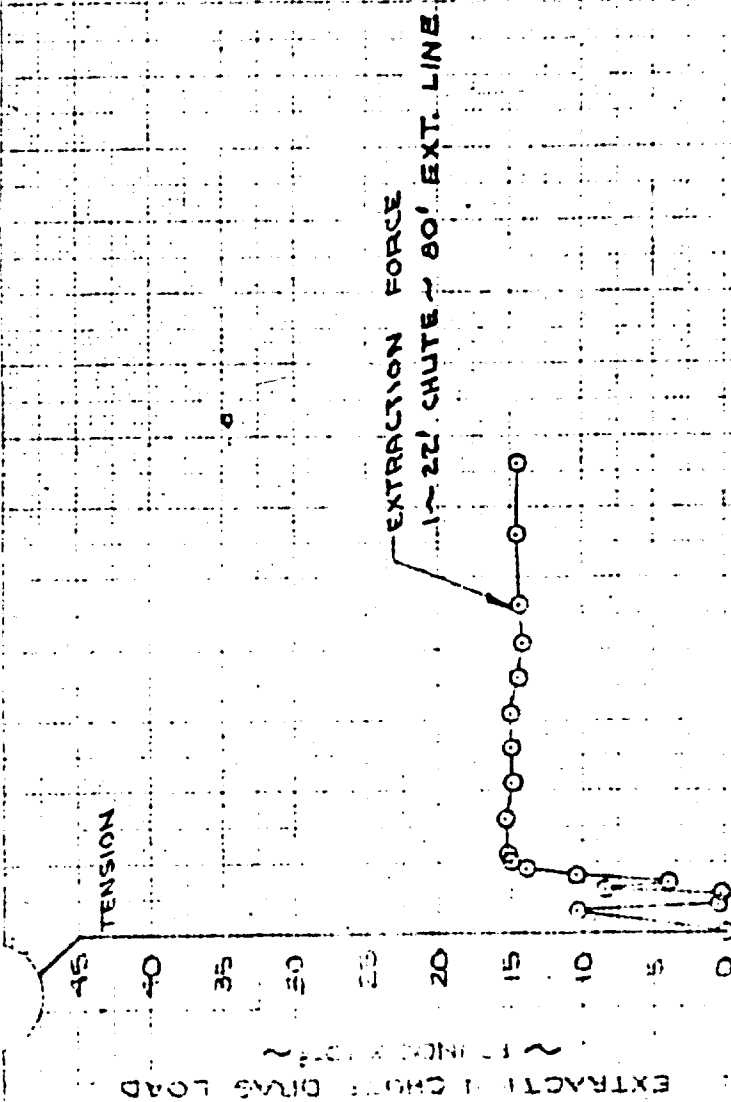
BENDING • VS9 345 ~ Mx

~ INCH-LBS X 10⁻⁶

0 1 2 3 4 5 6 7 8 9 10

VS9 345 ~ Mx

6008
ADS 75G



NOTE:
 1. GW ~ 180,000 LBS (APPROX)
 2. CG ~ N.A.
 3. FLAPS ~ 26 DEG.
 4. \dot{M} ~ 0.3 DEG (A/C N.D.)
 5. FAT ~ 6.0 °C.

PREPARED BY: RSA
 DATE: 5-11-65
 CHECKED BY: [Signature]

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
 MODEL C-141A
 PAGE 2-109

TIME HISTORY OF AERIAL DELIVERY

MODEL C-141A
 AF833077 LAC 6008

TEST DATE 5-10-65
 FLIGHT 121 DROP NO. 16

SHEET 1 OF 7

CARGO WT 35,540 LBS

RUN CONDITIONS

1. G.W. ~ 191,100 LBS
2. C.G. PRIOR TO DROP ~ 26.6 %MAC
3. C.G. AFTER DROP ~ 29.6 %MAC
4. FLAPS ~ 65 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. α ~ 0.3 DEG (A/C NU)

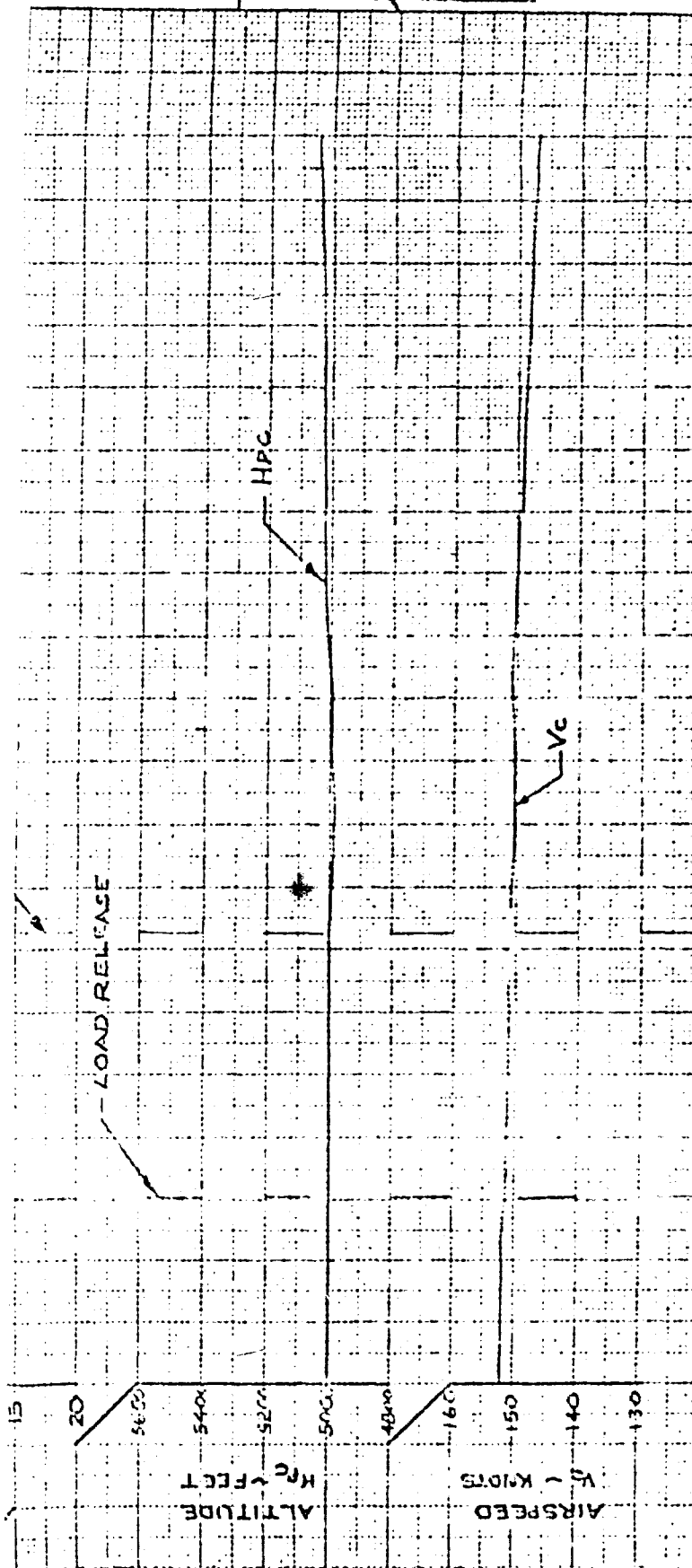
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 293 IN
3. CARGO C.G. POSITIONS
 LONG. ~ F5 825
 VERT. ~ V1 151

EXTRACTOR CHUTE INFORMATION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 18 IN
3. RATED CHUTE WEIGHT ~ 13 LBS
4. EXTRACTOR LIFT ~ 100 FT

FIGURE 2-109



6000

ADDITIONAL
 REVISED 11-12-65
 MBH

100

100

100

100



100

ER 5473

6008
ADS-16C

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL

NOTE:

δ CALCULATED FROM N_z DATA

N_z @ F.S. 1637

N_z @ F.S. 932 (C.G.)

N_z @ F.S. 277

PREPARED BY T.E.D.
DATE 5-11-65
CHECKED BY *[Signature]*

LOW SPEED GEORGIA COMPANY
ADDRESS: 1111 W. 11TH ST. ATLANTA, GA 30318

REPORT NO. ER 5473
MODEL C-141A
PAGE D-111

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
APG 3-8077 LAC 6008
TEST DATE: 5-10-65
FLIGHT 121 DROP NO. 15

SHEET 3 OF 3

CARGO WT. 35,540 LB

NOTE:
SEE FIGURE 2-BC SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

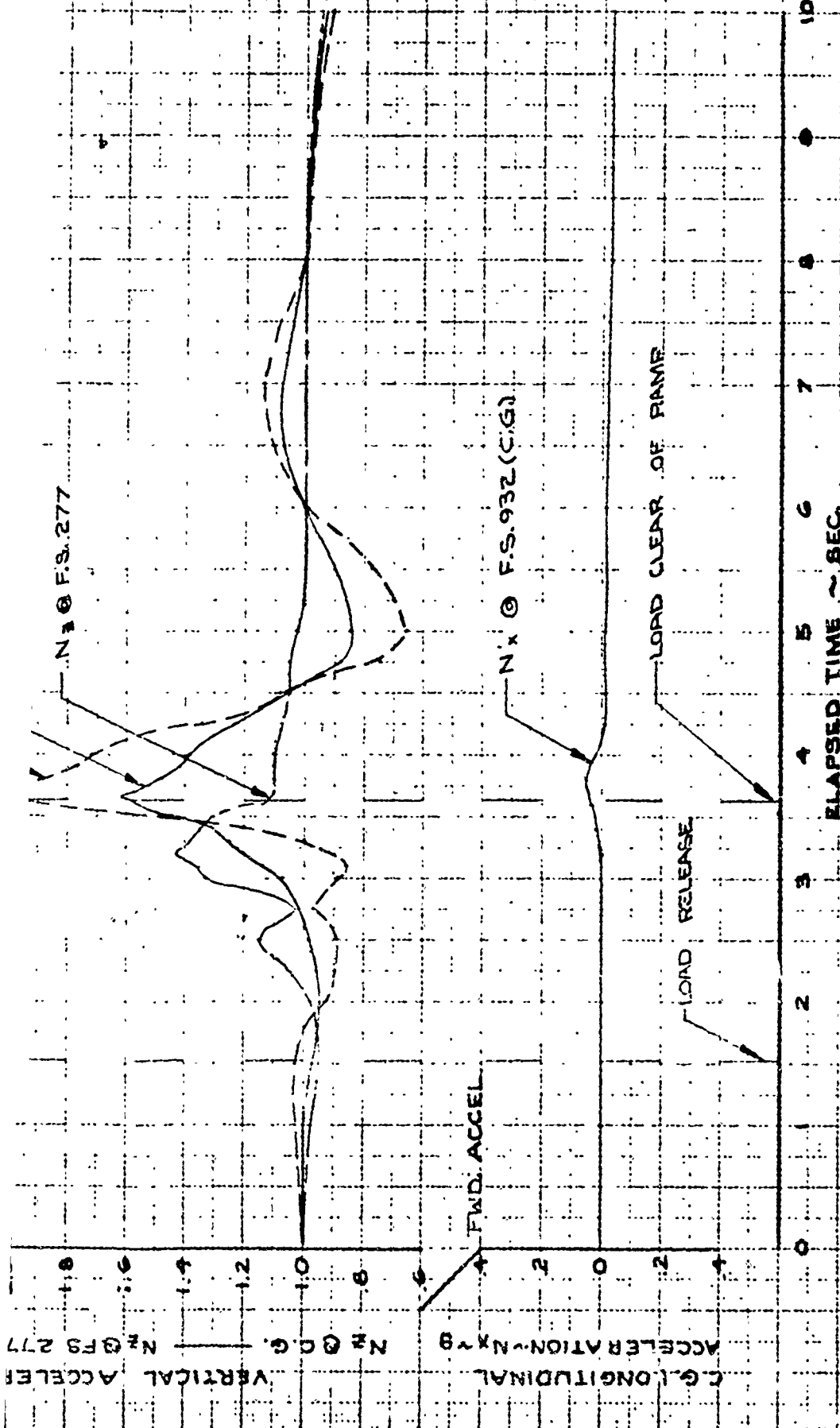
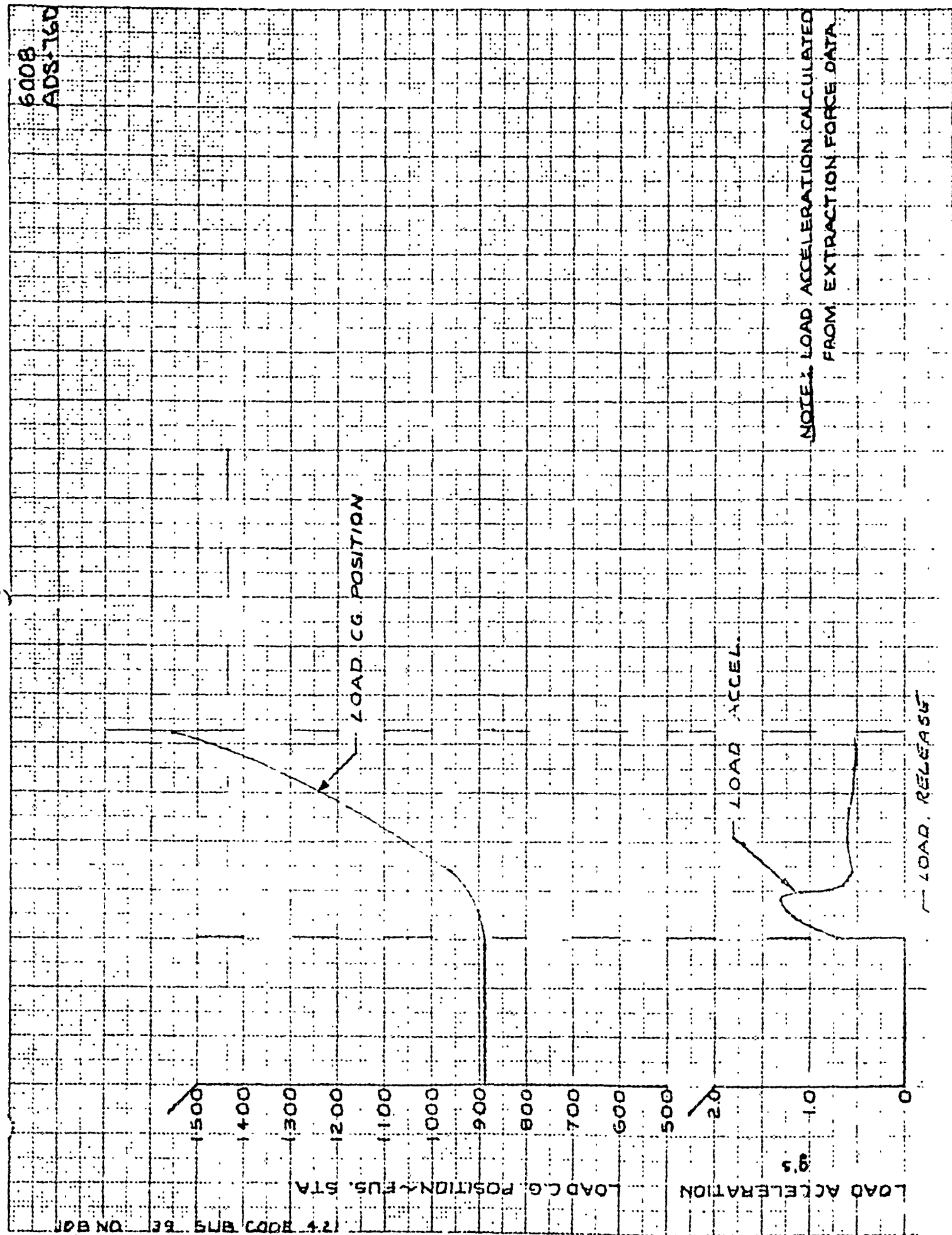


FIGURE 2-BC

6008
ADS-76C

6008
ADS-160



PREPARED BY RSA
DATE 5-11-65
CHECKED BY fw

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT No. ER 5473
MODEL C-141A
PAGE D-112

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 5-10-65
FLIGHT 121 DROP NO. 18

SHEET 4 OF 7

CARGO WT. 35540 LBS

NOTE:
SEE FIGURE 2-18A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

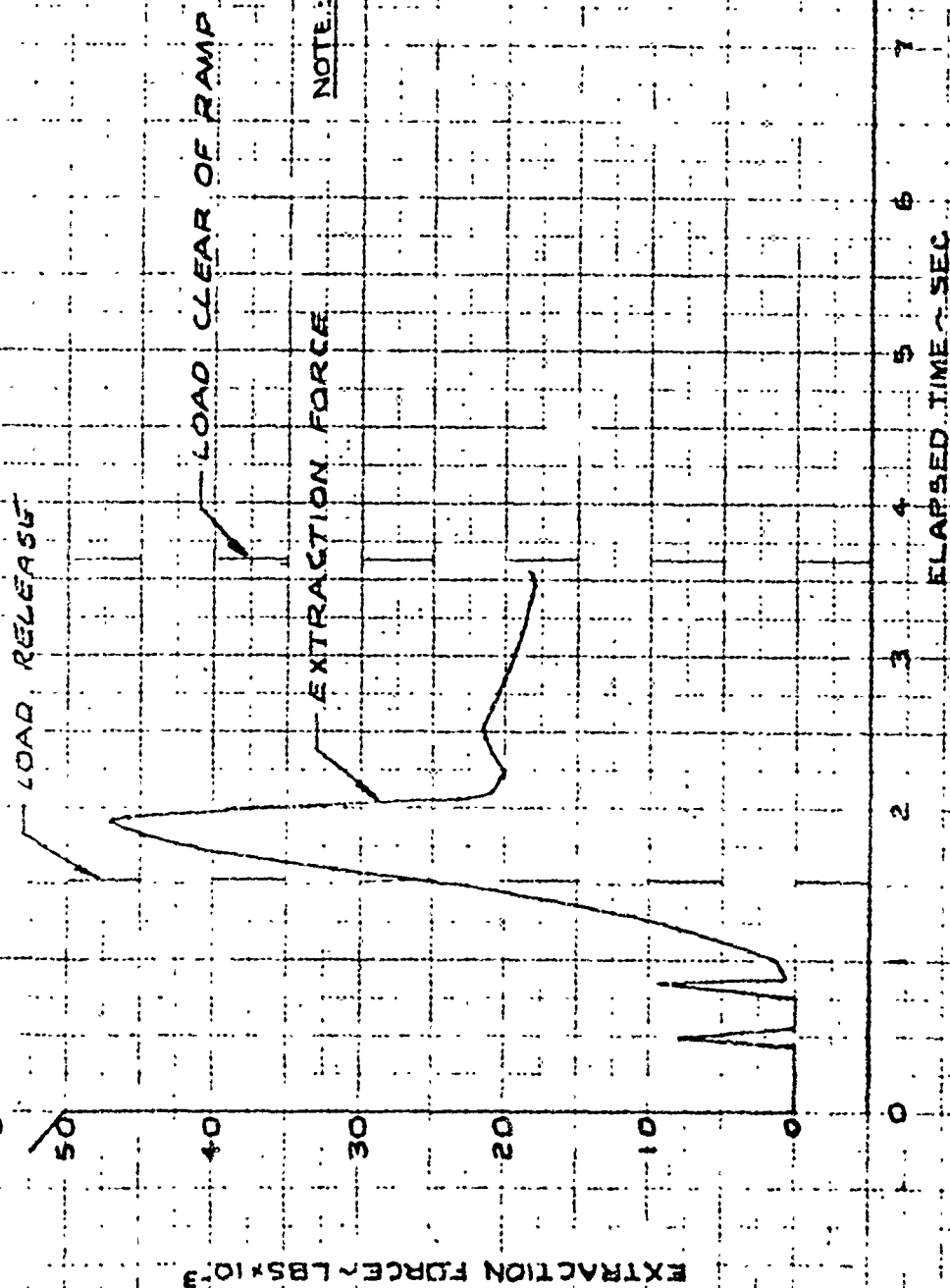
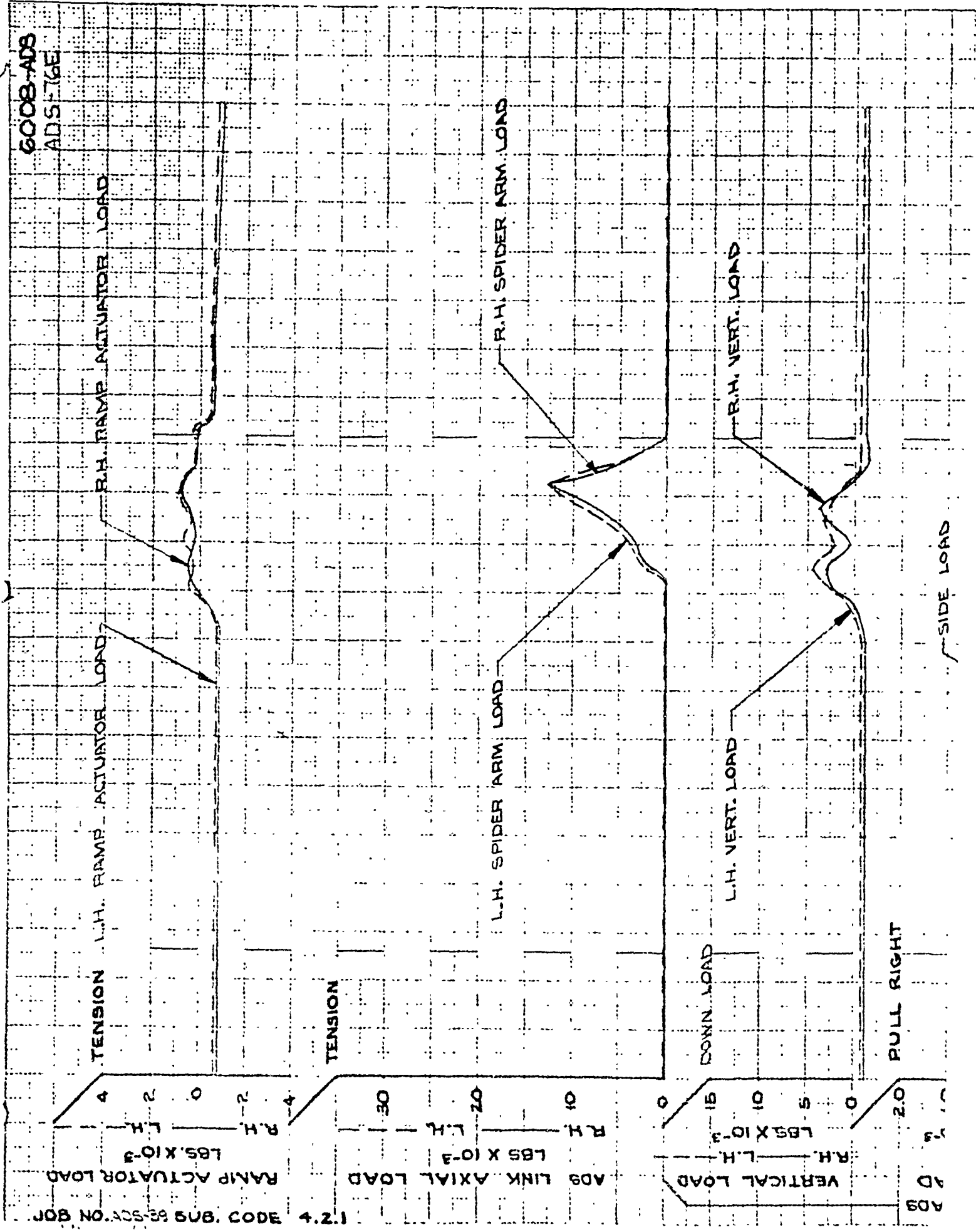


FIGURE 2-18D

6008
ADS-76D

6008-ADS
ADS-76E



JOB NO. ADS-39 SUB. CODE 4.2.1

PREPARED BY TED.
DATE 5-11-65
CHECKED BY *[Signature]*

LOGGING & DATA COMPANY

REPORT NO. ER 5473
MODEL C-141A
PAGE D-113

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 5-10-65

FLIGHT 121

DROP NO. 18

SHEET 5 OF 7

CARGO WT. 35,540 LBS

NOTE:
SEE FIGURE 18A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

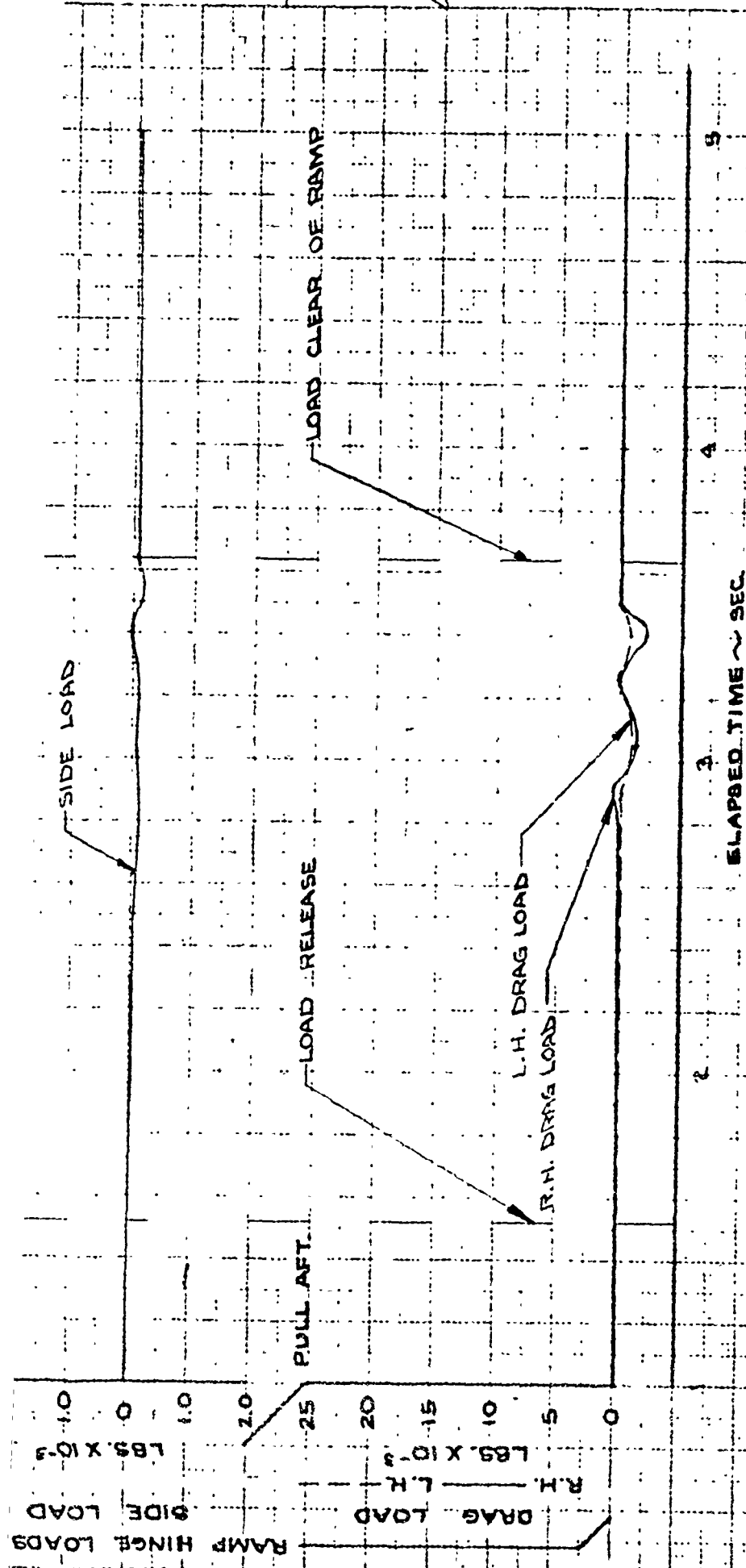


FIGURE 2-15E

6008
ADS-76E

6008
ADS-76F

COMPRESSION

PETAL DOOR ACTUATOR ROD

LOADS - LBS X 10⁻³

GA FORM 5000-1

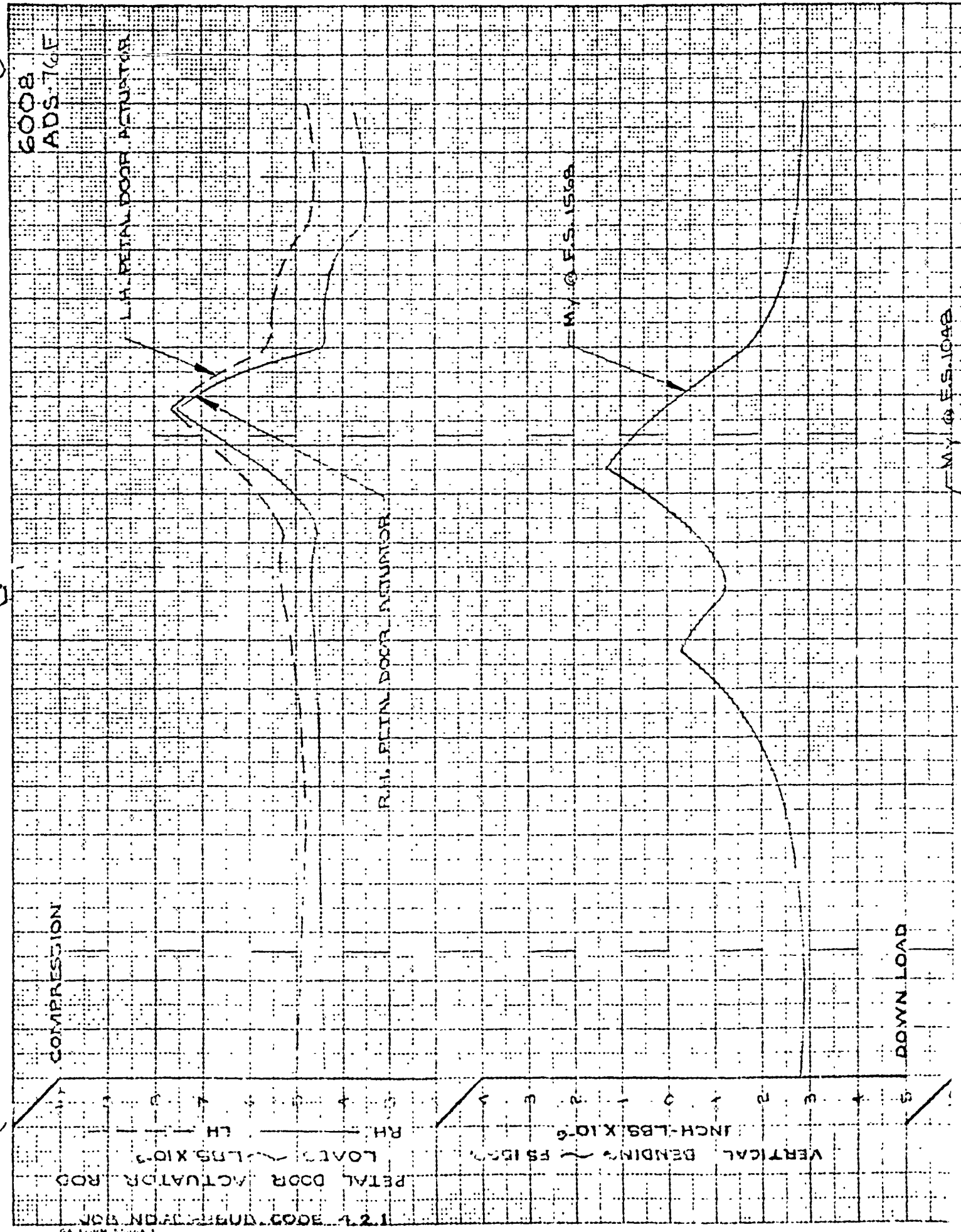
LH PETAL DOOR ACTUATOR

RH PETAL DOOR ACTUATOR

MY @ FS 1568

DOWN LOAD

MY @ FS 1048



PREPARED BY: JED
DATE: 5-11-65
CHECKED BY: JED

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A
PAGE D-114

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF65-8077

LAC 6008

TEST DATE: 5-10-65

FLIGHT 121

DROP NO. 12

SHEET 2 OF 7

CARGO WT. 33540 LBS

NOTE:
SEE FIGURE 18 SHEET 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

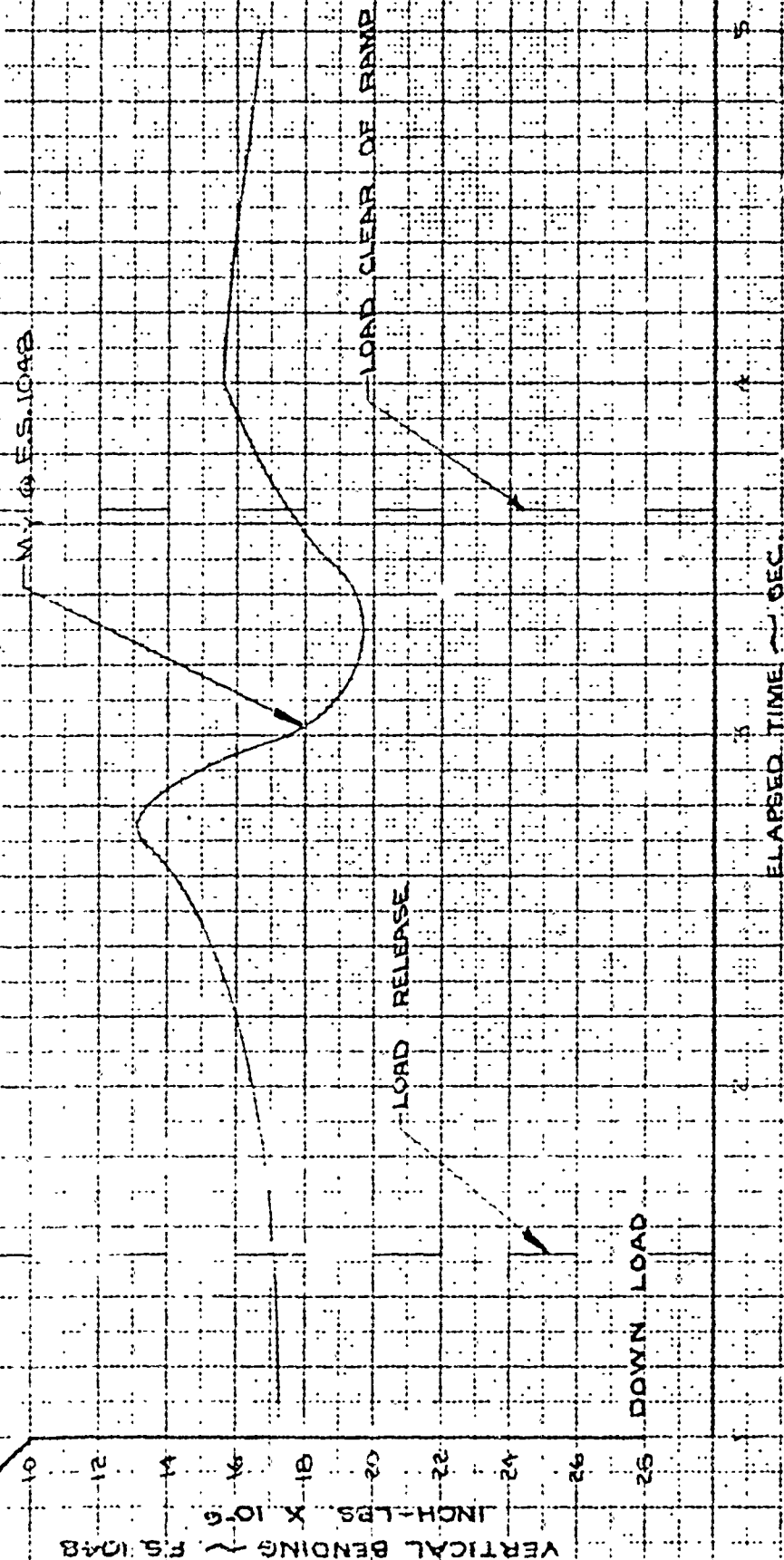
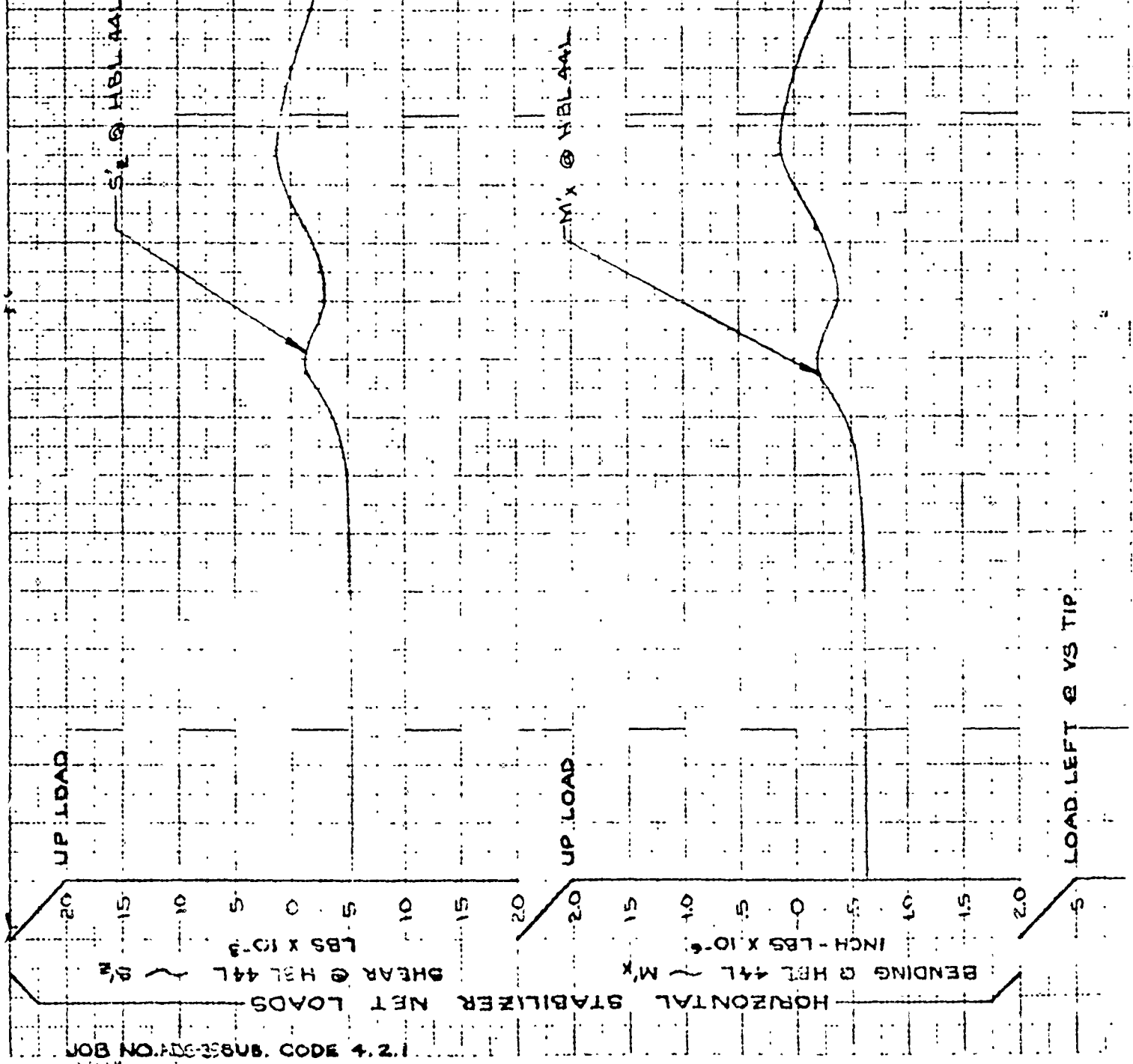


FIGURE D-15F

6003
ADS-76F

GOOD
ADS-76G



TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE: 5-10-65
FLIGHT ~ 121 DROP NO. 18

SHEET 1 OF 1

CARGO WT. 35,540 LBS

NOTE:
SEE FIGURE D-126 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD CLEAR OF RAMP

LOAD RELEASE

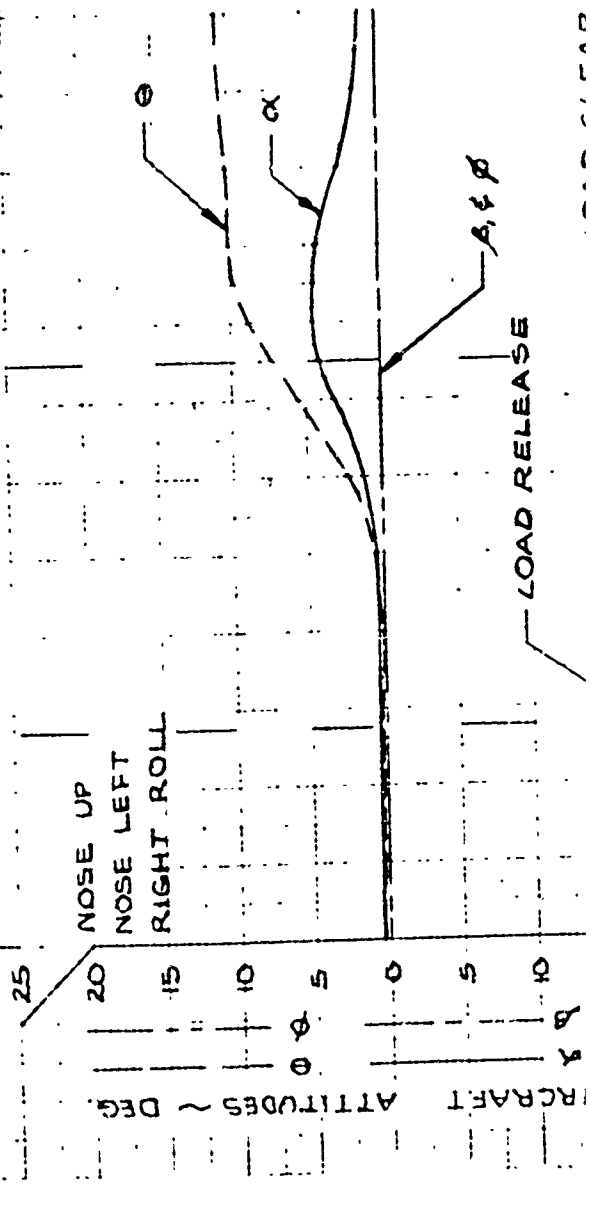
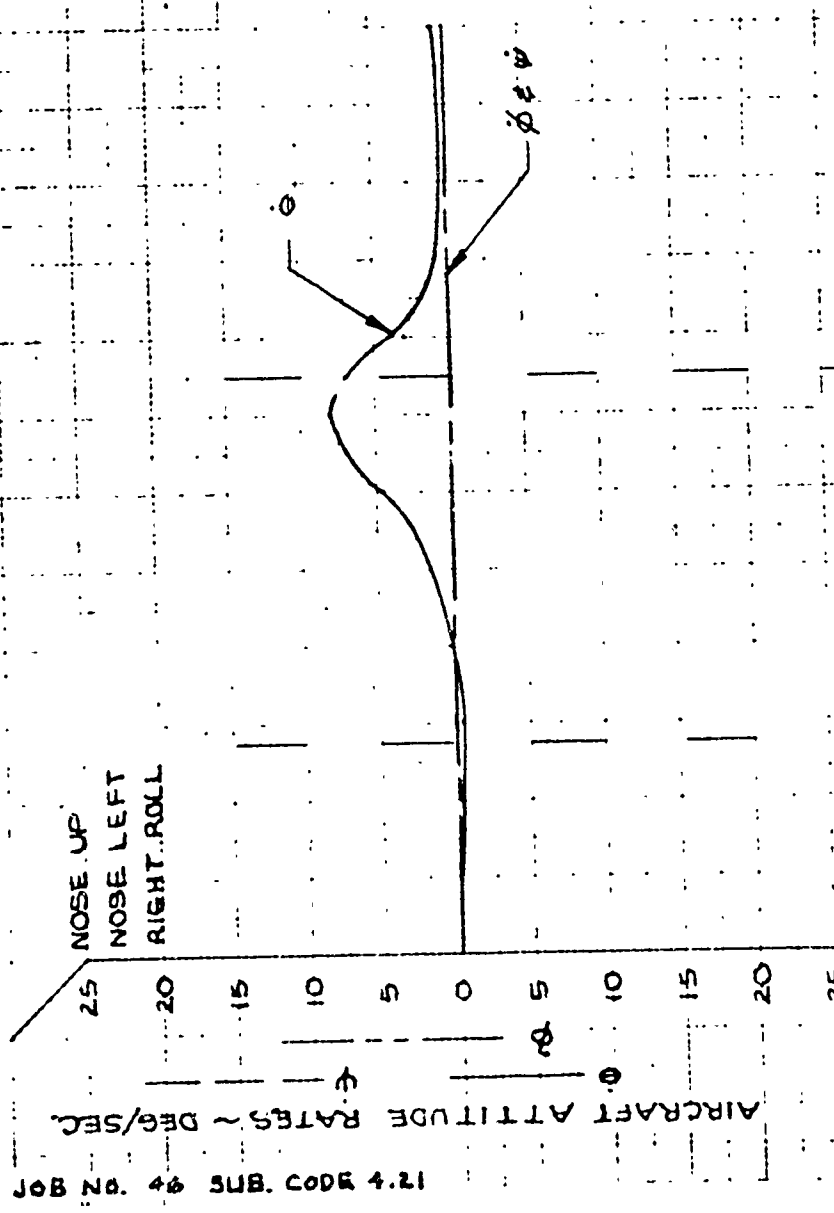
M_x @ VSS 345

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M_x
~ INCH-LBS X 10⁻⁶

FIGURE D-126

6008
ADS-16G

6008
ADSB3A



END OF BAND

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-11A

AF638077

LAC 6008

TEST DATE - 5-20-65

FLIGHT ~ 130

DROP NO. ~ 19

SHEET 1 OF 7

CARGO WT. 35710 LBS

RUN CONDITIONS

1. G. W. ~ 195600 LBS.
2. C. G. PRIOR TO DROP ~ 26.4% MAC.
3. C. G. AFTER DROP ~ 26.8% MAC.
4. FLAPS ~ 68%
5. GEAR ~ UP
6. AVG. EPR ~ 125 (4 ENGINES)
7. α_H ~ 1.3° (A/C N.U.)

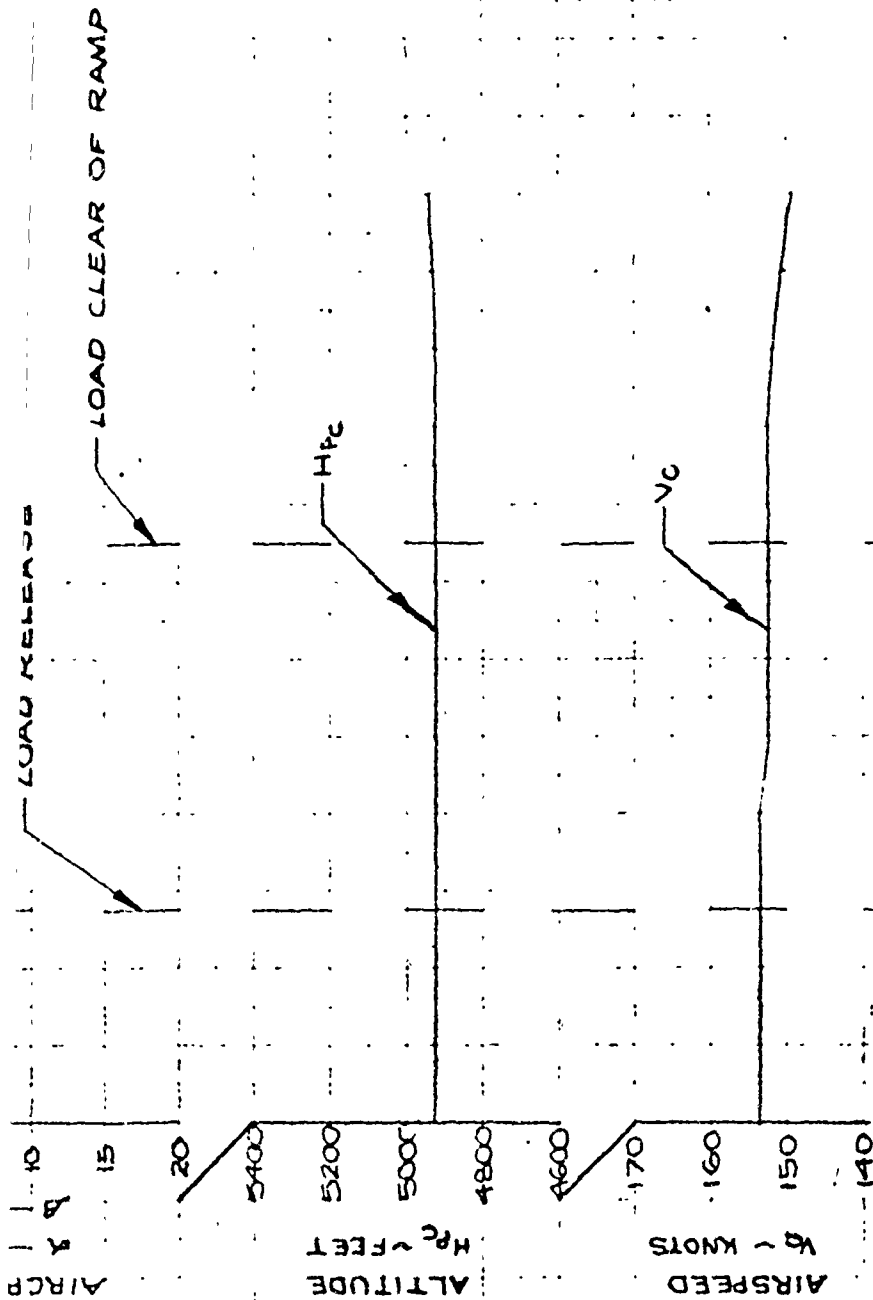
CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN
3. CARGO C.G. POSITIONS
LONG. ~ FS 887
VERT. ~ WL 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT
3. RATED CHUTE FORCE / CARGO WT ~ 0.6
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE C-19A



6008

ADS83A

REVISED 12-15-65
MHW

6008
ADS-83D

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

50

60

70

80

70

60

CONTROL FORCES ~ LBS.

AILERON POSITION ~ DEG.

F_e, F_a, F_r

F_{aL}

T.E. UP

RSA
DATE 5-20-65
JMD

ER 5473
MODEL C-141A
D-117

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE ~ 5-20-65
FLIGHT ~ 130 DROP NO ~ 12

SHEET 2 OF 7

CARGO WT. 35710 LBS

NOTE:
SEE FIGURE D-19B SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

LOAD RELEASE
LOAD CLEAR OF RAMP

57.4 deg

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONS

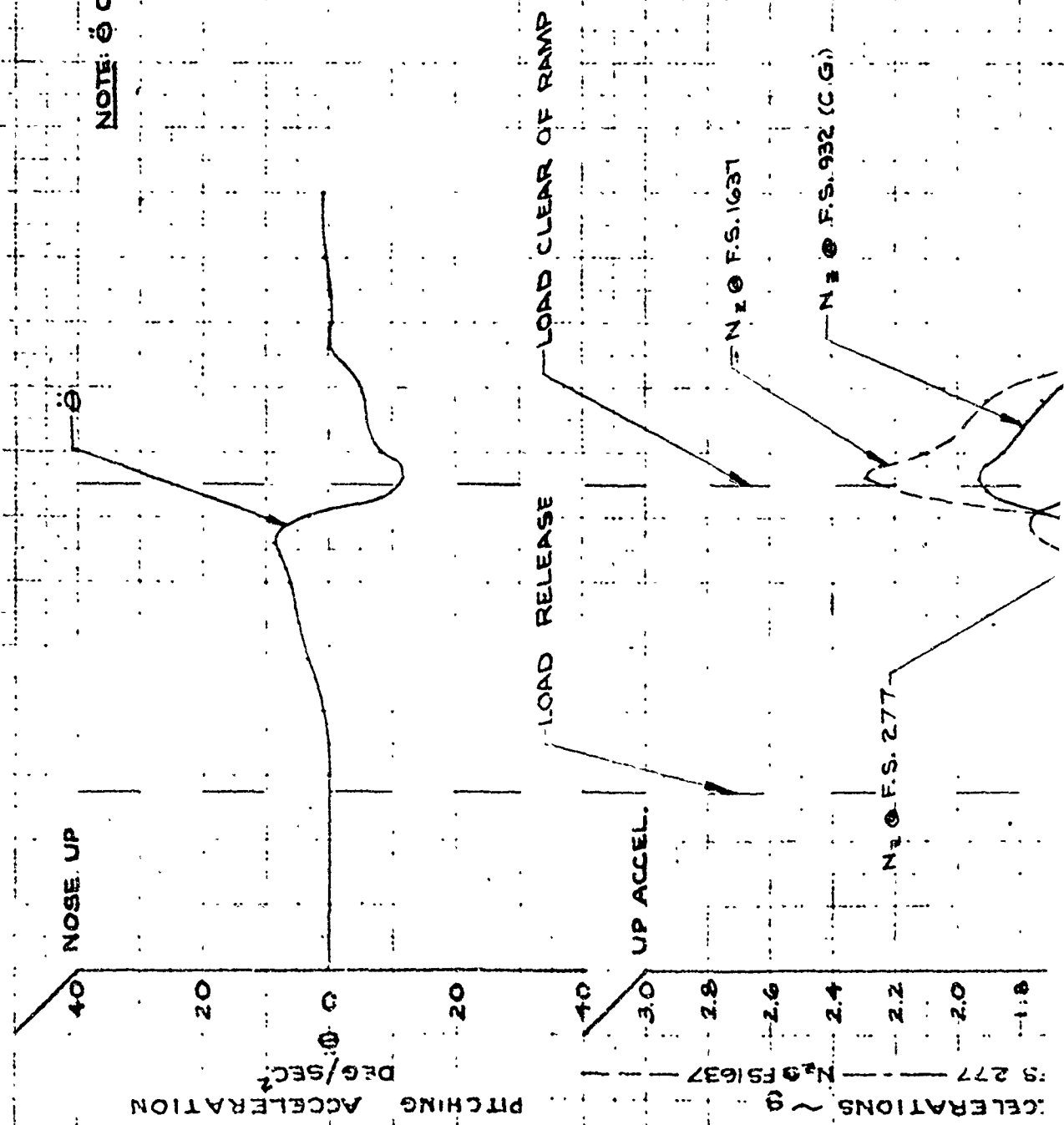
DEGREES

FIGURE D-19B

6008
AD6-83B

6008
AD3-B3C

NOTE: $\dot{\theta}$ CALCULATED FROM N_z DATA



T.E.D
5-20-68
JED

ER 5473
C-141A
D-118

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-8077 LAC 6008
TEST DATE: 5-20-68
FLIGHT-190 DROP NO. 19

SHEET 3 OF 7

CARGO WT. 35 710 LBS

NOTE:
SEE FIGURE 19A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

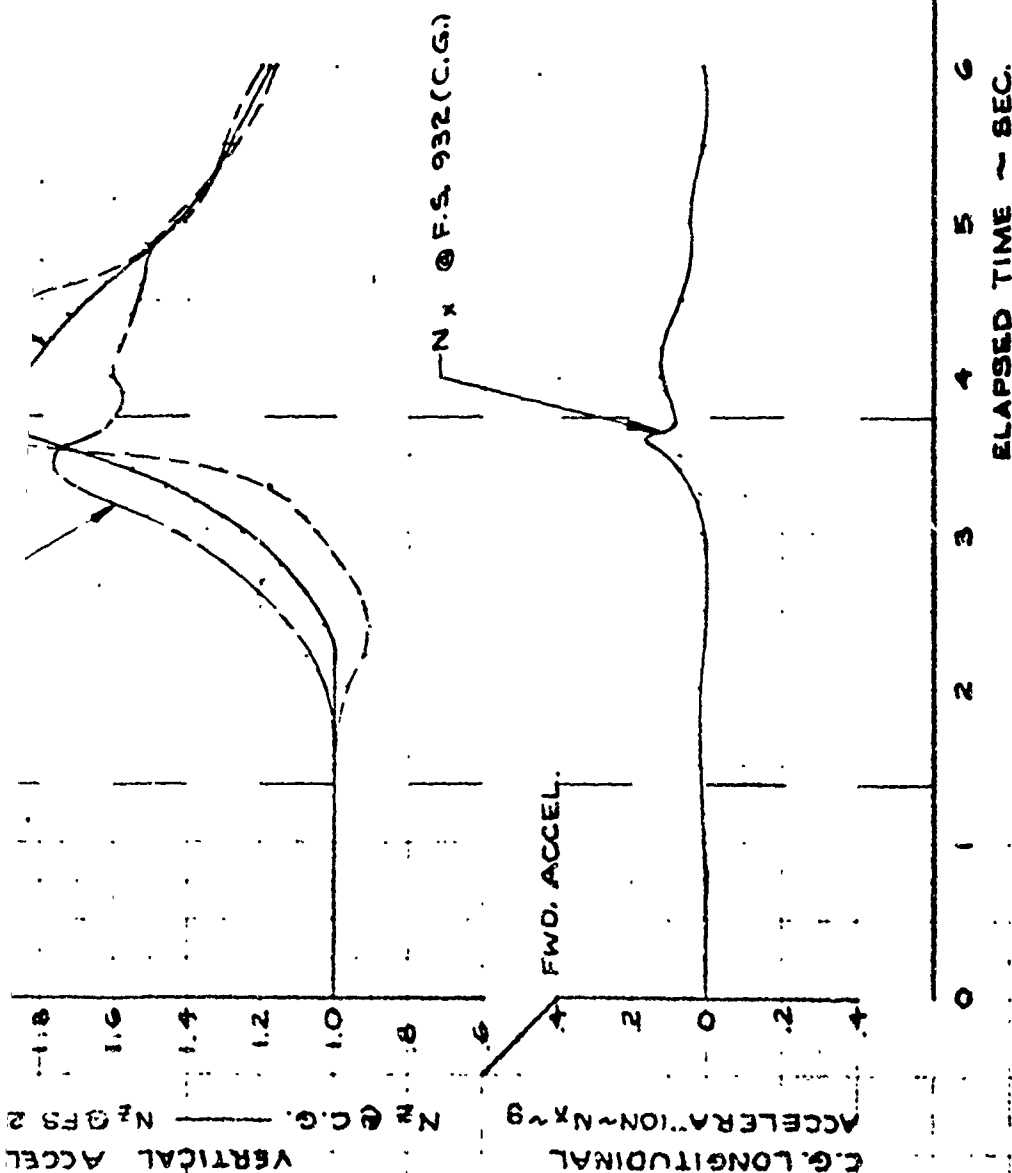


FIGURE 2-19C

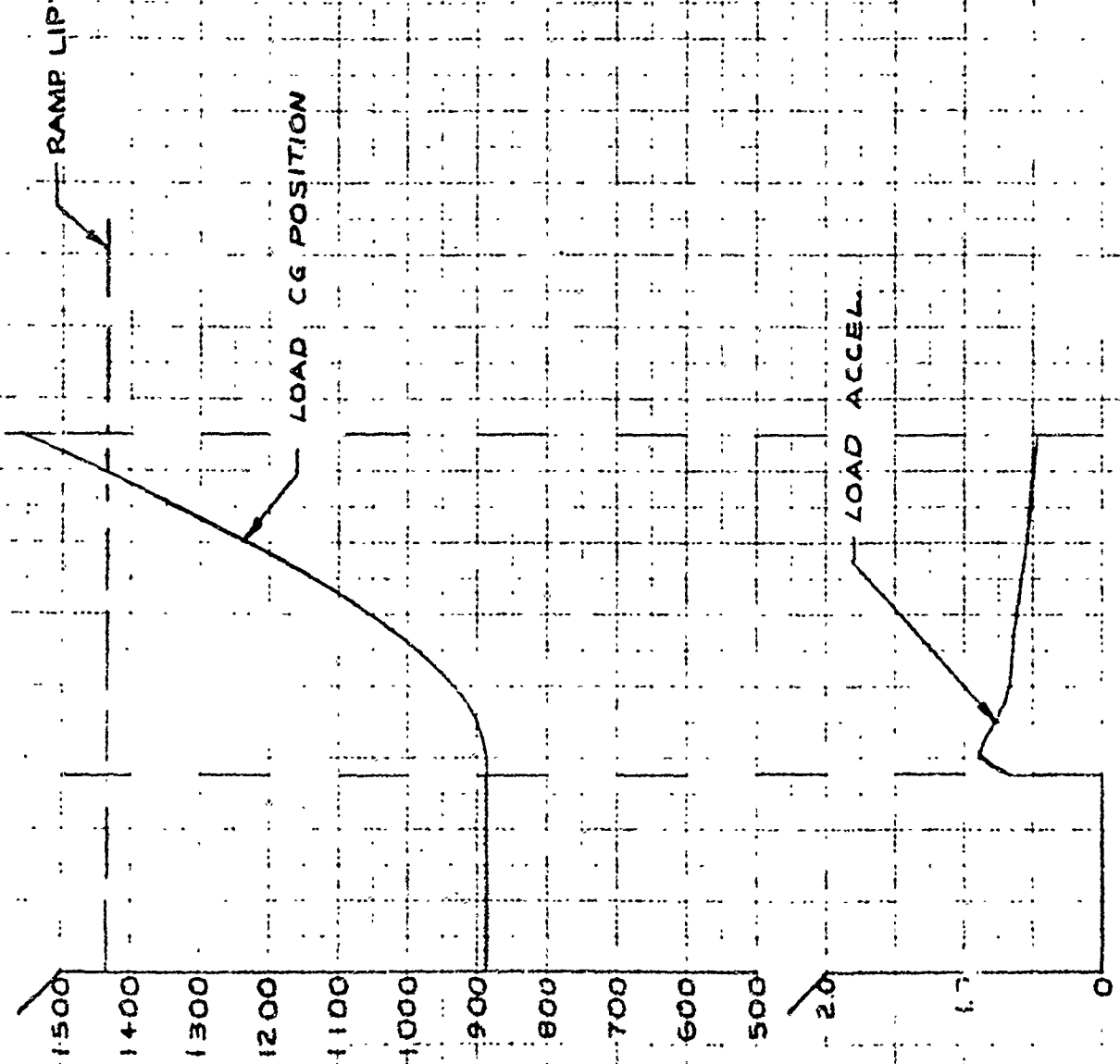
6008
ADS-83C

6008
ADS-83D

4.1.2

JOB NO 46 SUB CODE 421

LOAD CG POSITION ~ FUS. STA.



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.

PREPARED BY **RSA**
DATE **5-20-63**
CHECKED BY **JWD**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
MODEL **C-141A**
PAGE **D-119**

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL **C-141A**

AF 63-8077 **LAC 6008**

TEST DATE **5-20-65**

FLIGHT **130** DROP NO. **19**

SHEET **4** OF **7**

CARGO WT. 35710 LBS

NOTE:
SEE FIGURE **D-19A**, SHEET **1** OF **1**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

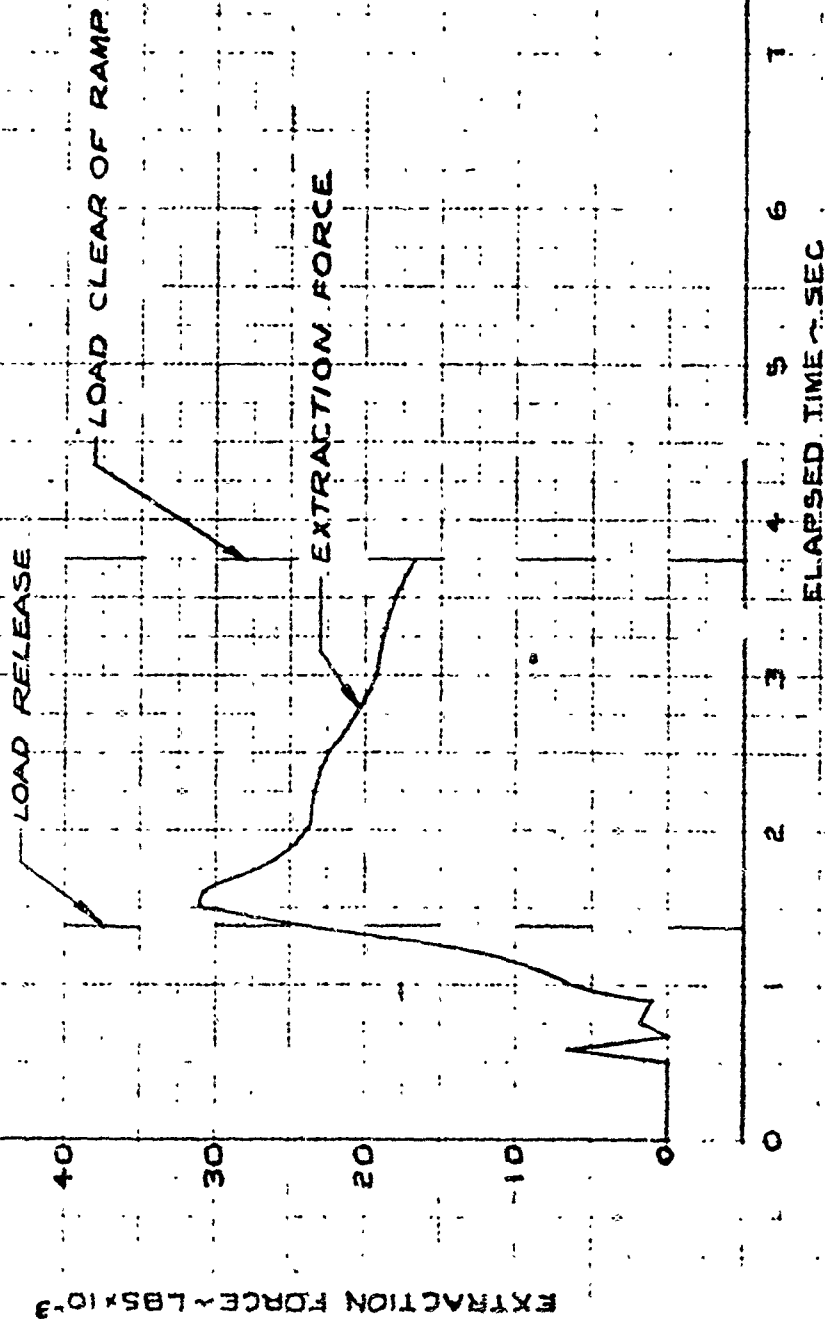
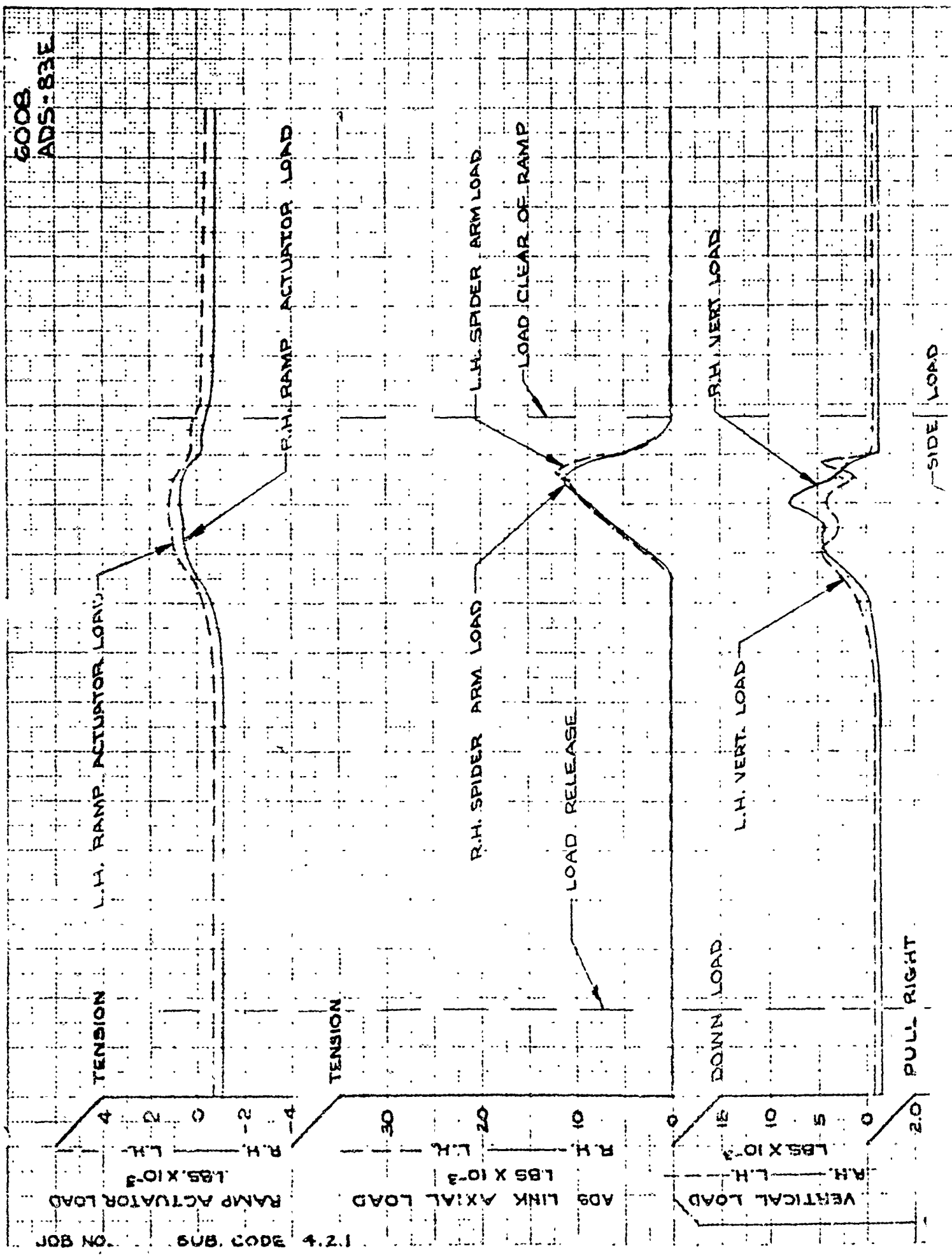


FIGURE **D-19D**

6008
ADS-83D



PREPARED BY T.E.D.
 DATE 3-21-65
 BY JED

TESTED BY DATA COMPANY

REPORT NO. ER 5473

MODEL C-141A

PAGE D-120

TIME HISTORY OF AERIAL DELIVERY MANGUYER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 3-20-65

FLIGHT-130

DROP NO. 19

SHEET 5 OF 7

CARGO WT. 35,710 LBS

NOTE:
 SEE FIGURE D-19A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

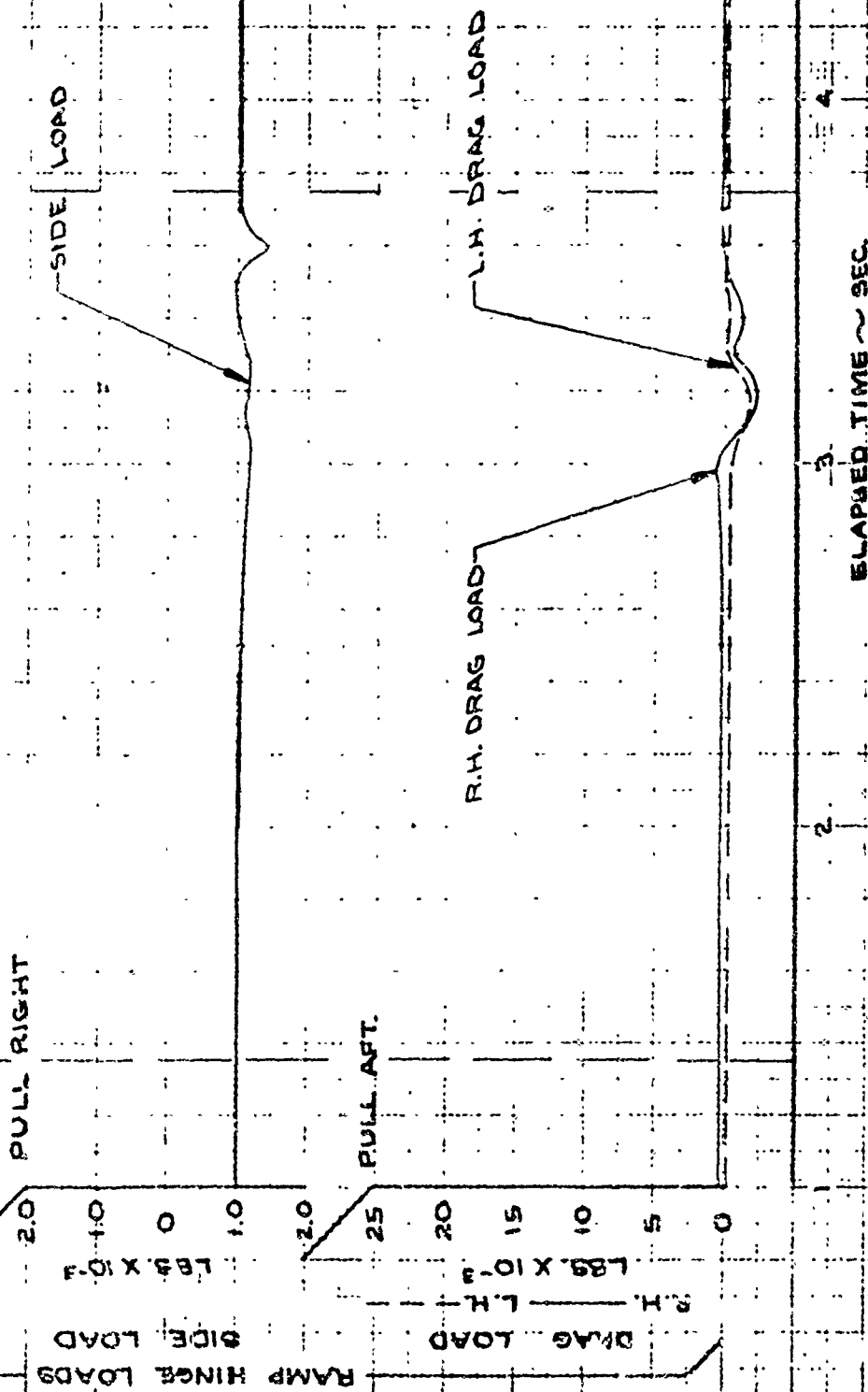
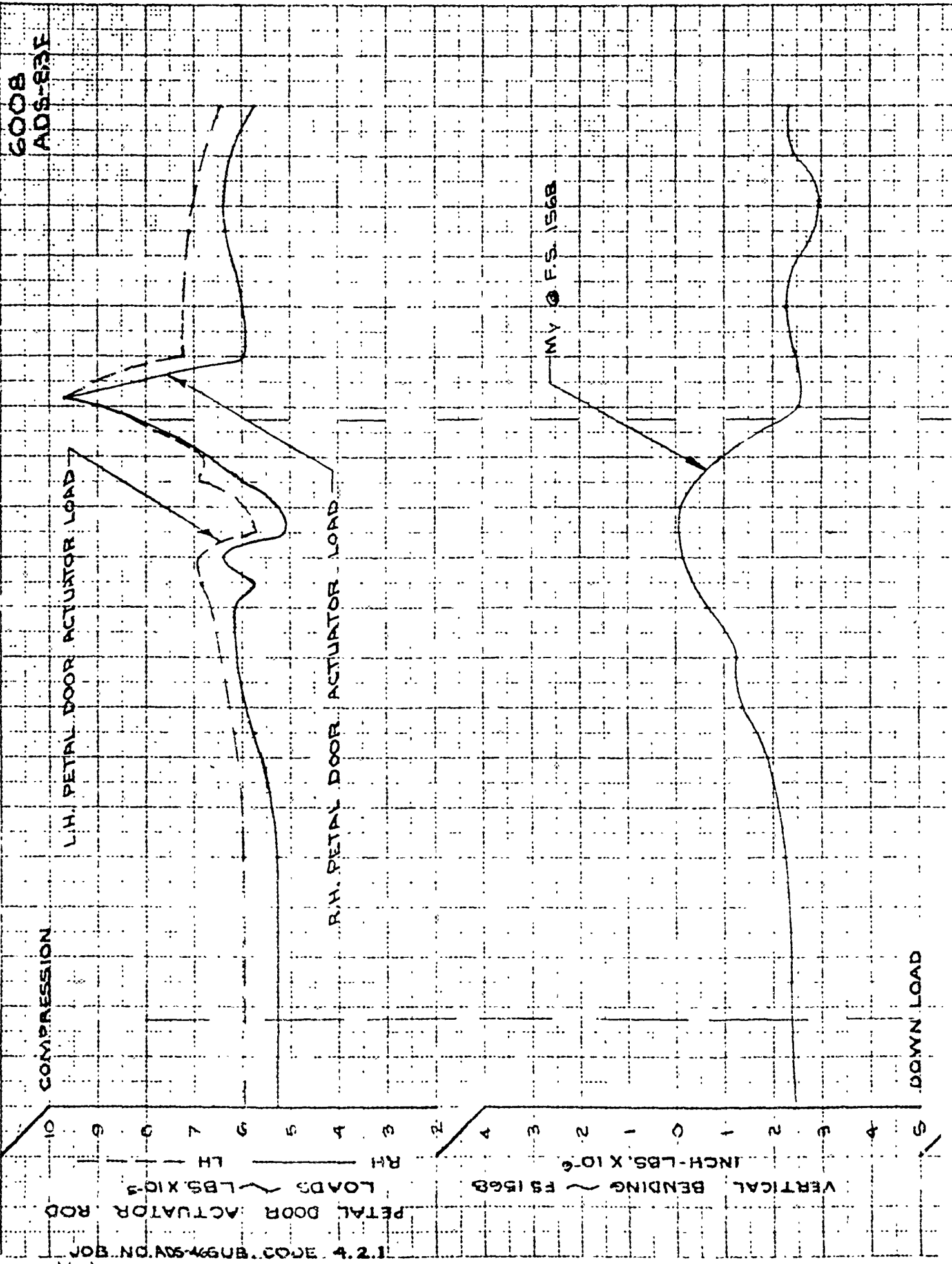


FIGURE D-19E

6008
 ADS-83E



PREPARED BY T.E.D.
DATE 5-21-65
CHECKED BY JMD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A
PAGE D-121

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG5-B077 LAC 6008
TEST DATE 5-20-65
FLIGHT ~ 130 DROP NO-19

SHEET 6 OF 7

CARGO W.T. 35,710 LBS

NOTE:
SEE FIGURE 19A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

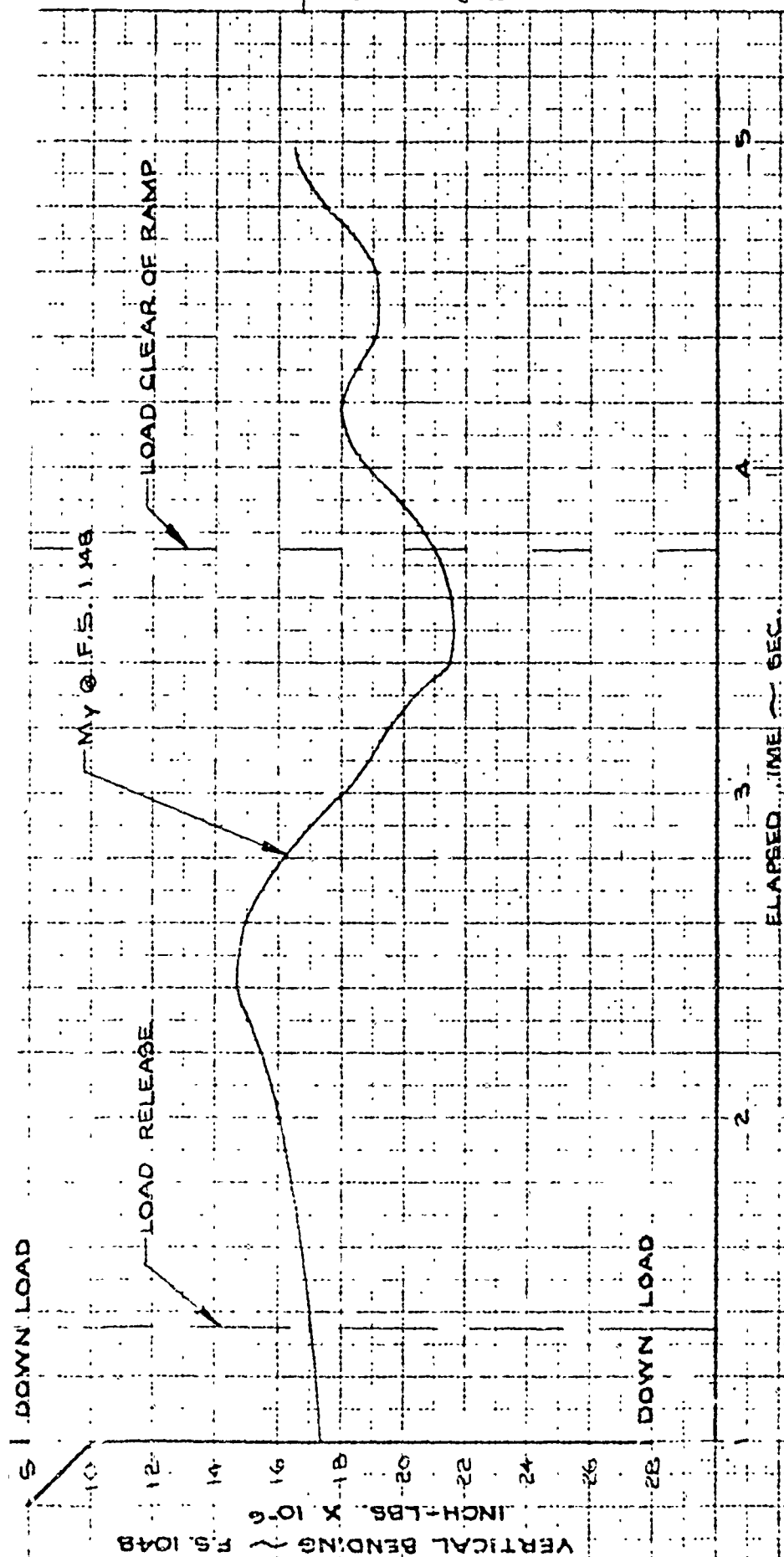
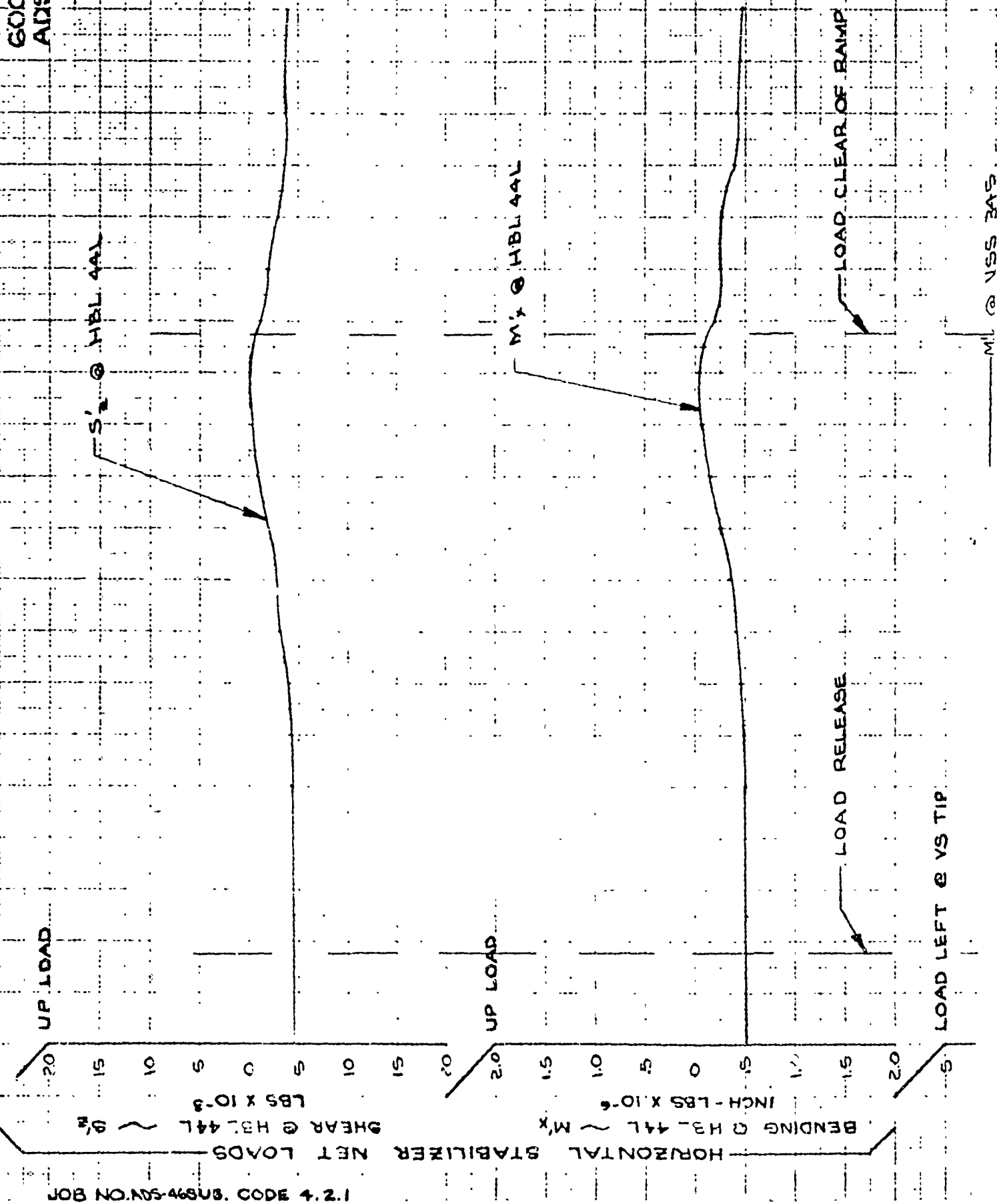


FIGURE D-3F

6008
ADS-83F

6008
ADS-B3S



JOB NO. ADS-468UB. CODE 4.2.1

MIL @ VSS 345

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 5-20-65

FLIGHT ~ 150

DROP NO. ~ 19

SHEET 1 OF 1

CARGO WT. 25,710 LBS

NOTE:

SEE FIGURE D-19, SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-19 G

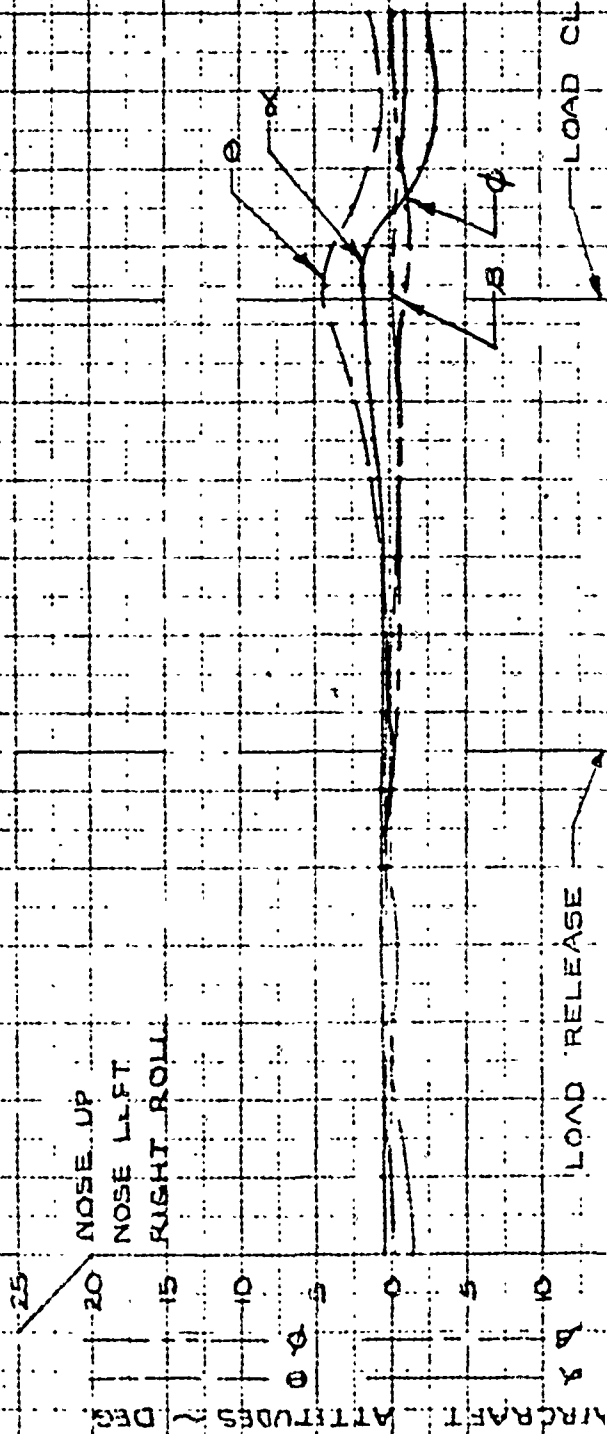
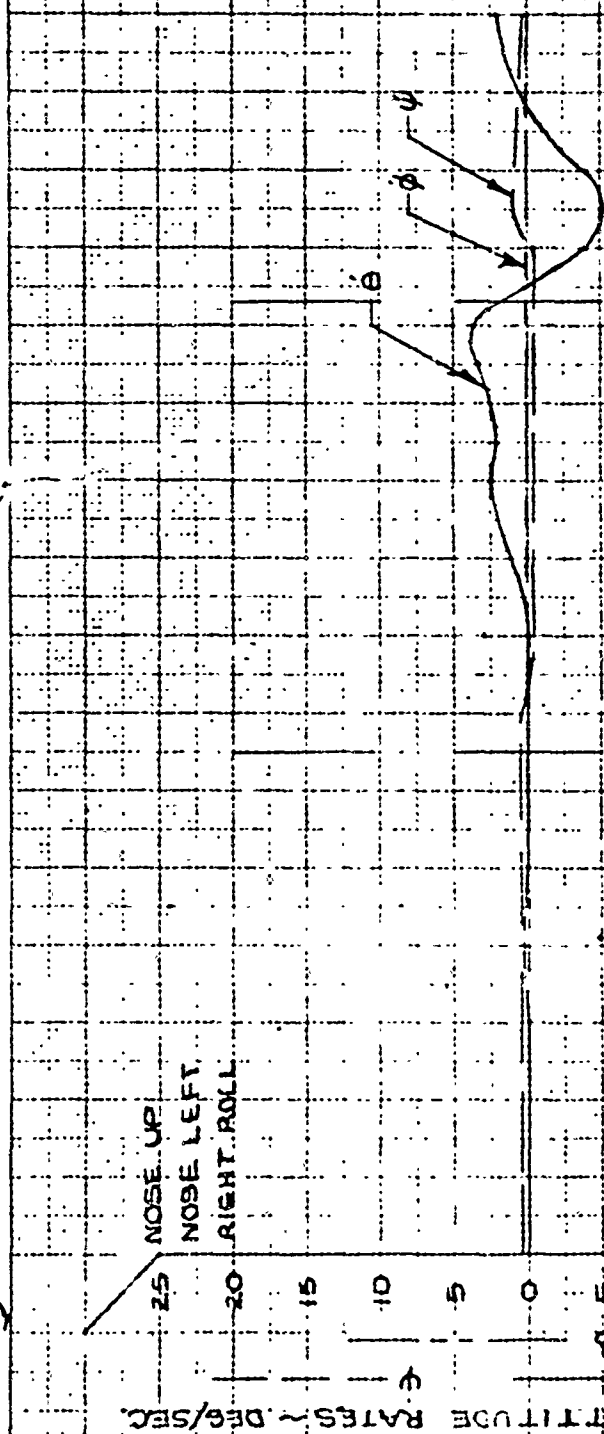
VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M_x
~ INCH-LBS X 10⁻⁶

M_x @ VSS 345

6008

AD-836

6008
ADS-981A



17.4 6008 ADS-981A SUB CODE 4.21

PREPARED BY FCW

DATE 6-17-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

REPORT NO. ER 5473

MODEL C-141A

PAGE D-123

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 6008

TEST DATE 6-15-65

FLIGHT 142

DROP NO. 20

SHEET 1 OF 7

CARGO WT. 34960 LBS

RUN CONDITIONS

1. G. W. ~ 195400 LBS.
2. C. G. PRIOR TO DROP ~ 26.2% MAC
3. C. G. AFTER DROP ~ 30.1% MAC
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.26 (4 ENGINES)
7. α ~ 1.0 DEG. (A/C N.D.)

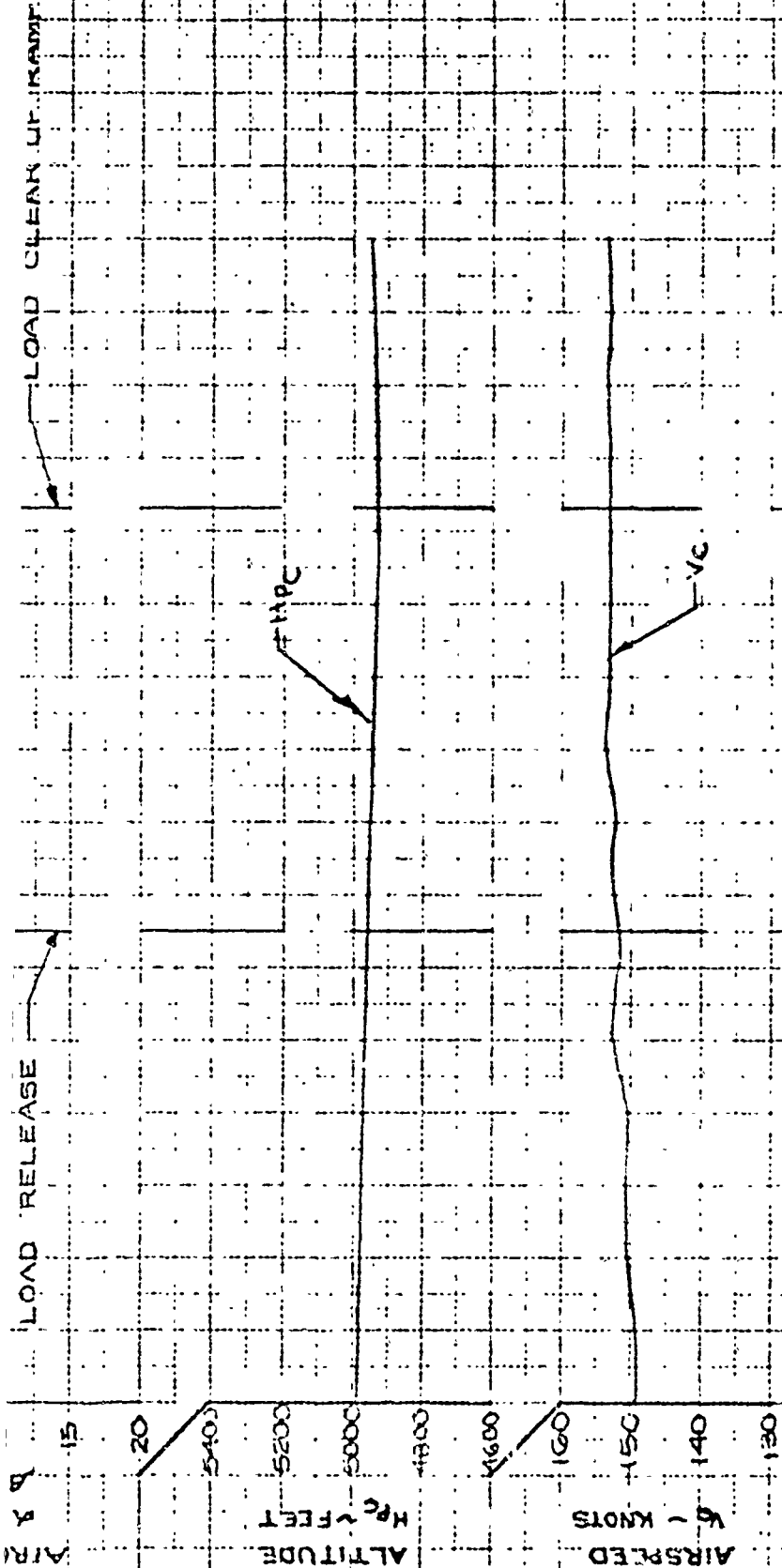
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO, C.G. POSITIONS
LONG. ~ F3 881 IN.
VERT. ~ WL 124

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT
3. RATED CHUTE FORCE/CARGO WT. ~ 40
4. EXTRACTION LINE LENGTH ~ 140 FT

FIGURE D-20A



6008

ADS-98A

REVISED 12-15-65
MBN

PREPARED BY FCW
DATE 4-17-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-124

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 6-15-65
FLIGHT 142 DROP NO 20
SHEET 2 OF 7
CARGO WT. 34960 LBS

NOTE:
SEE FIGURE 20 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

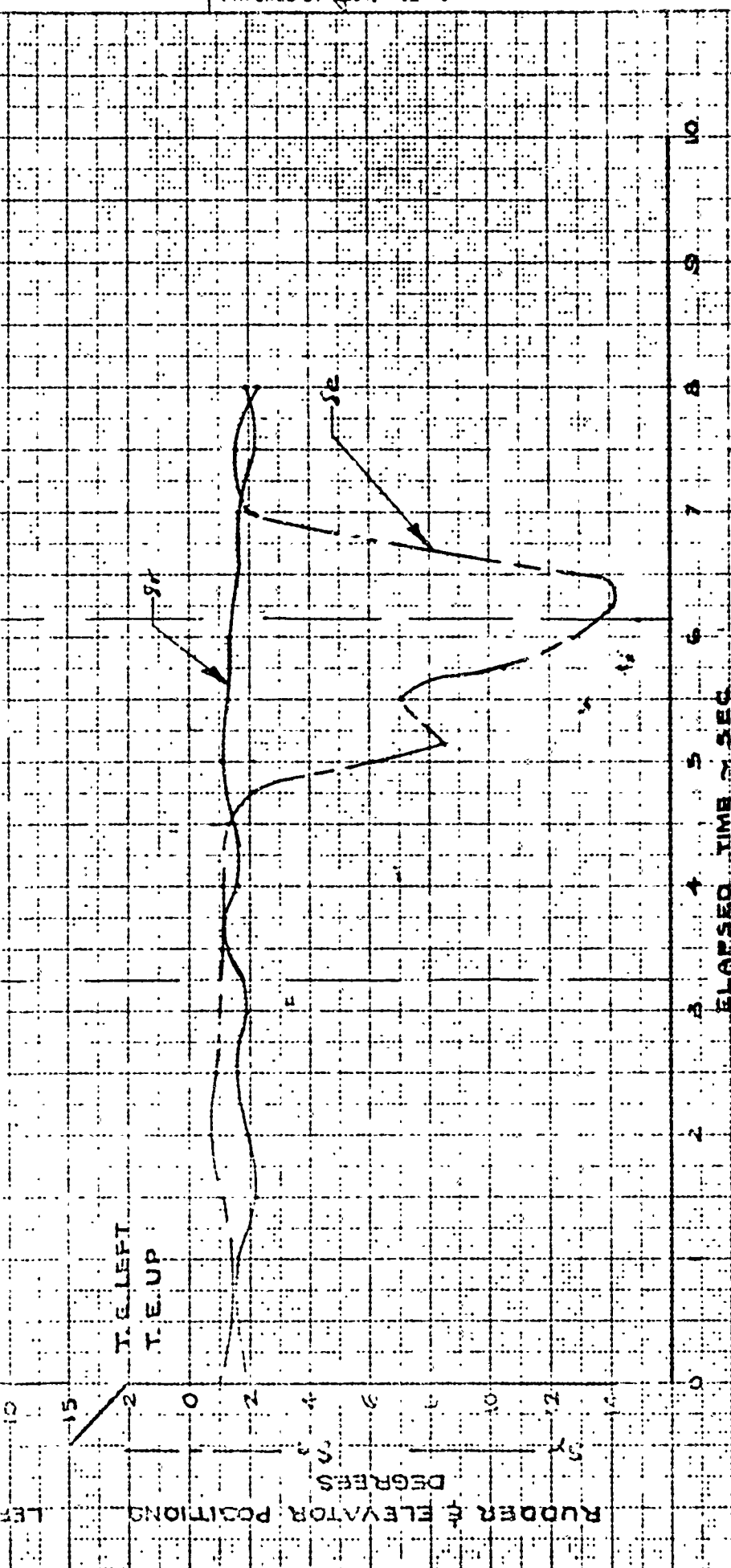


FIGURE 20B

6008
ADG-98B

6008.
ADS-98C

NOTE: $\dot{\theta}$ CALCULATED FROM N_z DATA

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL.

ACCELERATIONS N_z
N_z OF 2.77
N_z OF 5.1637

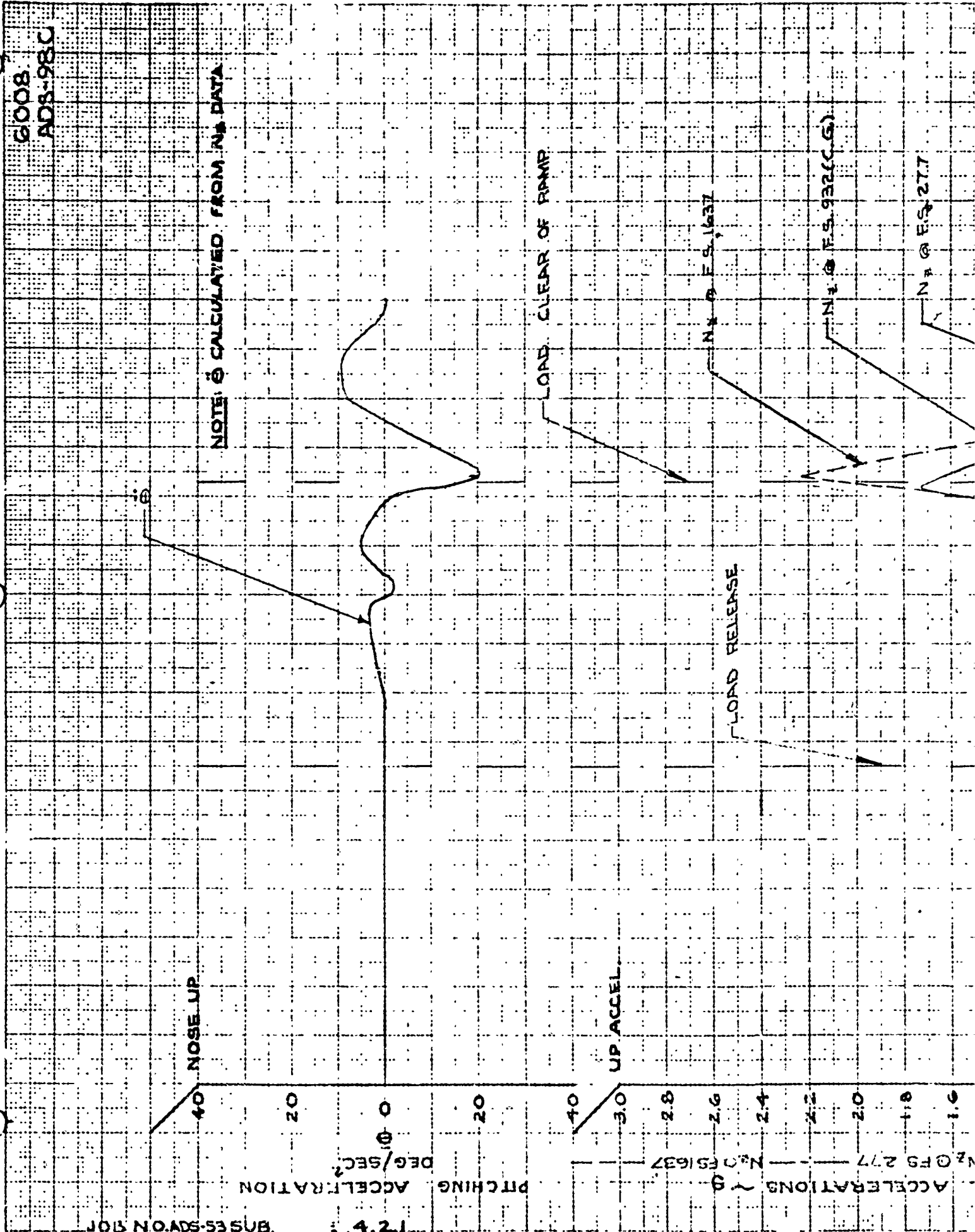
LOAD CLEAR OF RAMP

LOAD RELEASE

N_z OF 5.1637

N_z OF 5.932(C.G.)

N_z OF 5.277



PREPARED BY **TED**
 DATE **6-16-65**
 CHECKED BY **JWO**

REPORT NO. **ER 5473**
 MODEL **C-141A**
D-125

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C141A**
AFG3-2077 **LAC 6008**
 TEST DATE **6-15-65**
 FLIGHT **142** **DROP NO. 20**

SHEET 3 OF 7

CARGO WT. 34,960 LBS

NOTE:
 SEE FIGURE **D-20A** **SHEET 1 OF 7**
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

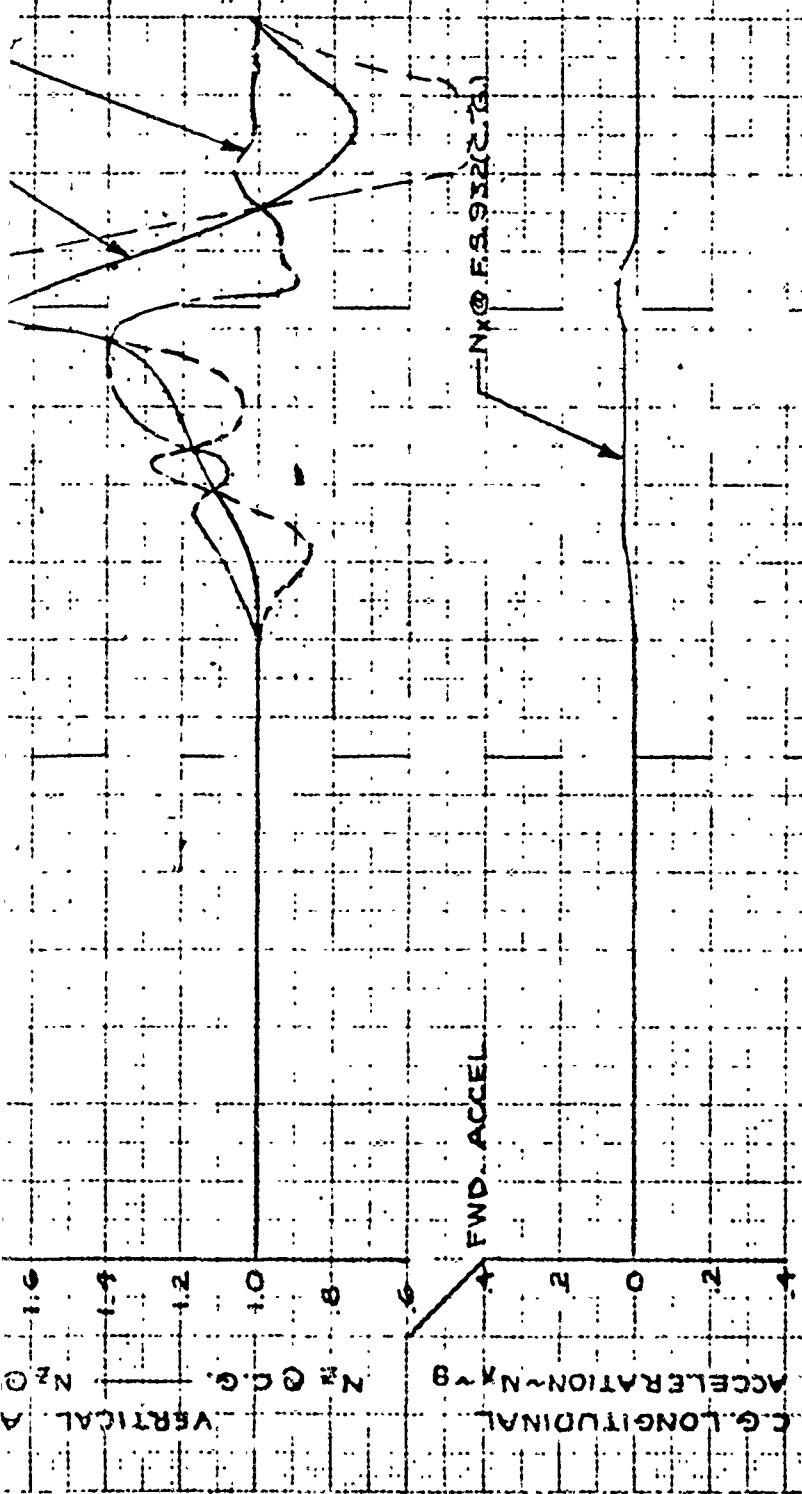
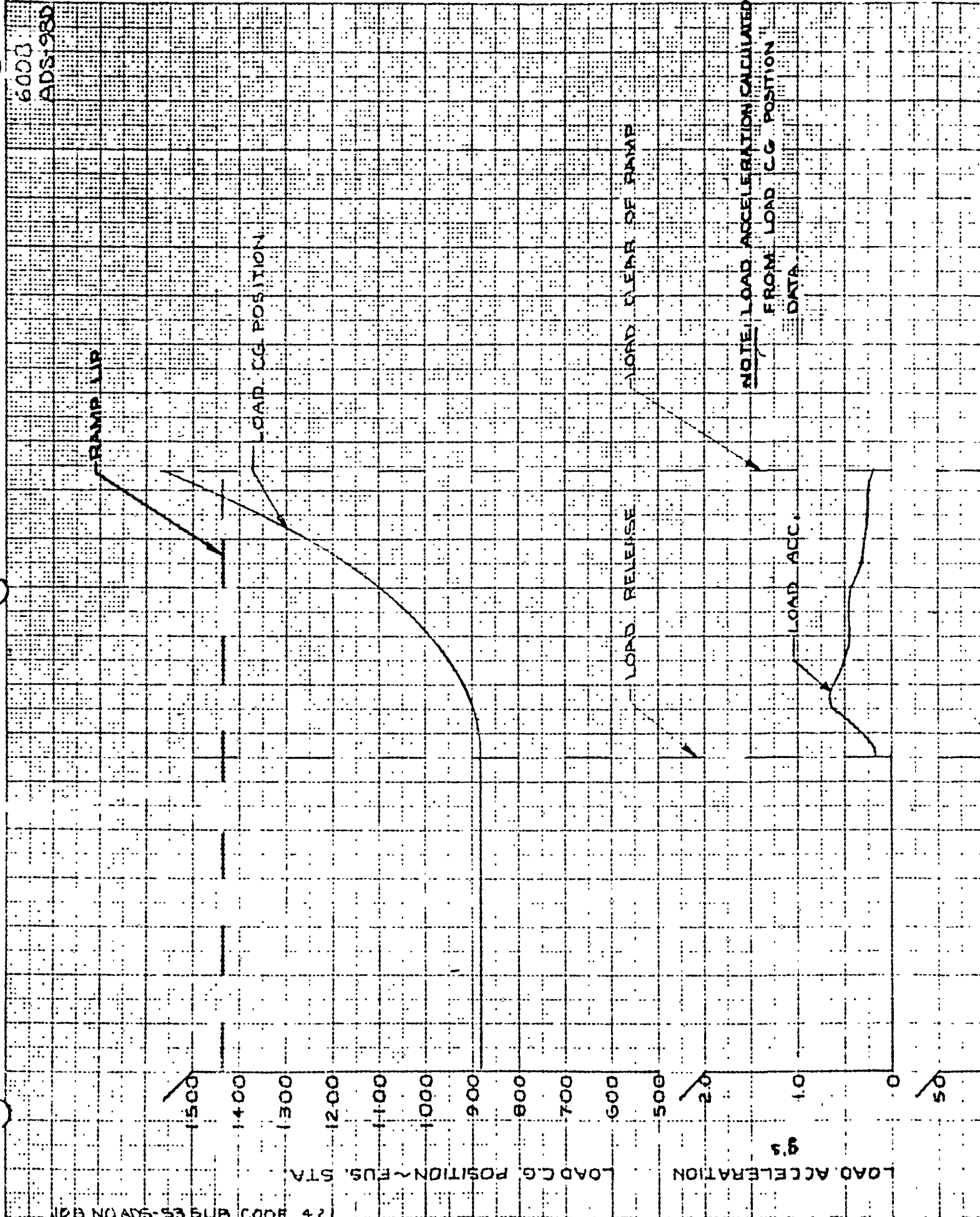


FIGURE D-20C

6008
ADS-98C

6003
ADS-980



PREPARED BY TED
DATE 6-17-65
CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-126

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF G3-BQ77 LAC 6008
TEST DATE 6-15-65
FLIGHT 142 DROP NO. 20

SHEET 4 OF 7

CARGO WT. 34960 LBS.

NOTE:
SEE FIGURE D-20A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

EXTRACTION FORCE N/A DUE TO INSTRUMENTATION MALFUNCTION

ID
9
8
7
6
5
4
3
2
1
0

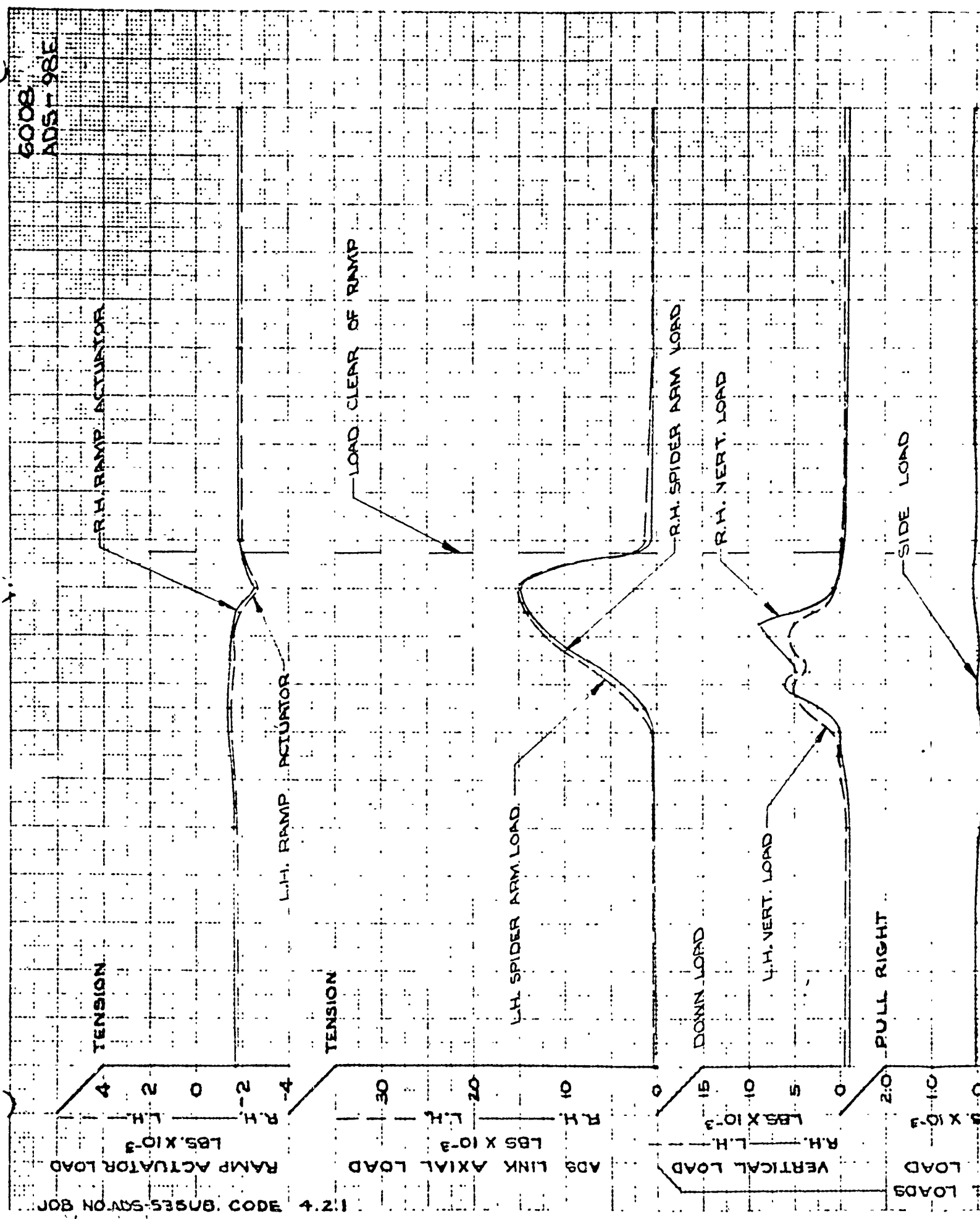
ELAPSED TIME - SEC

FIGURE D-20D

EXTRACTION FORCE - LBS $\times 10^{-3}$

6008
ADS-98D

6008
AD5-98E



FORMER BY TED
DATE 6-16-65
REL. BY JUP

LOCATED BY J. A. J. MEANY
AT VERNON, MISSISSIPPI, AIR FORCE PAYON

REPORT NO. ER 5473
MODEL C-141A
PAGE D-127

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 6-15-65

FLIGHT 142

DROP NO. 20

SHEET 5 OF 7

CARGO WT. 34,960 LBS

NOTE:
SEE FIGURE D-20A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

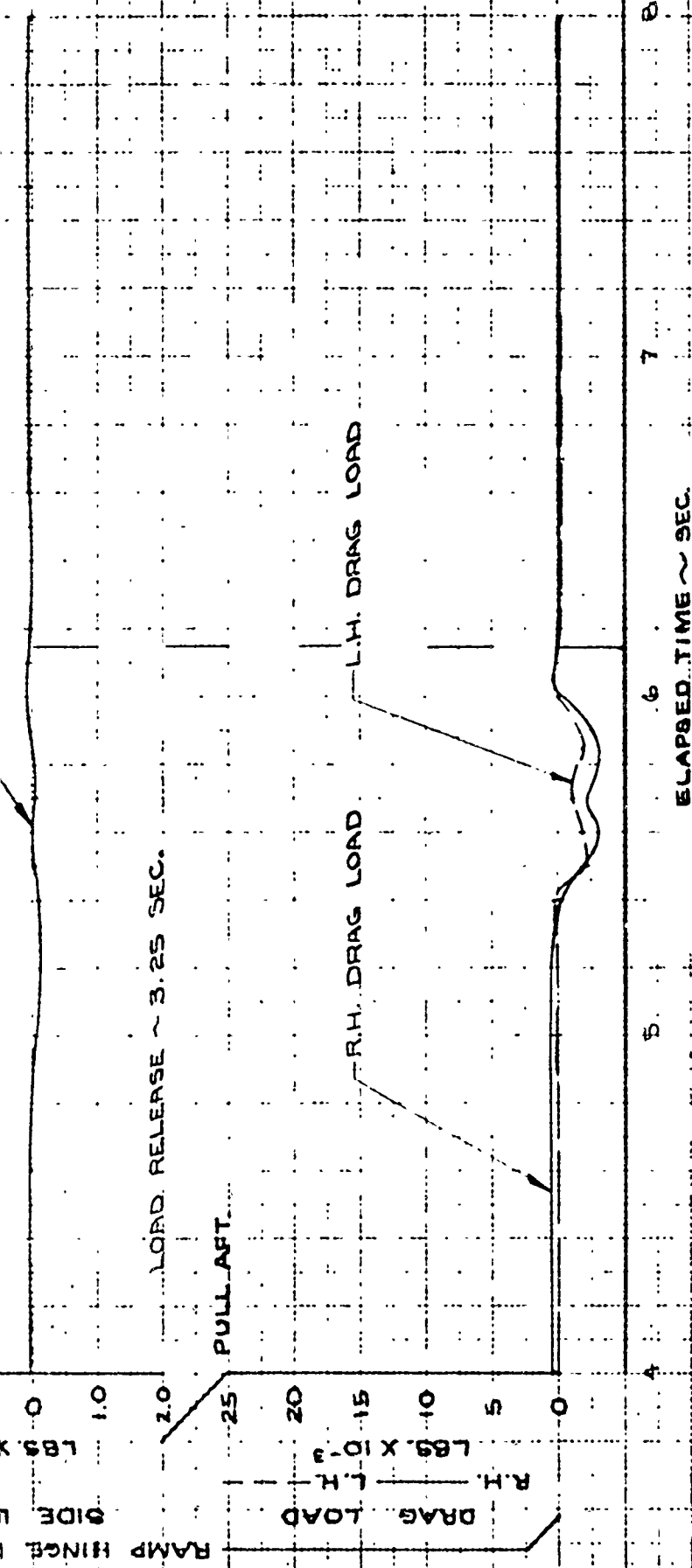
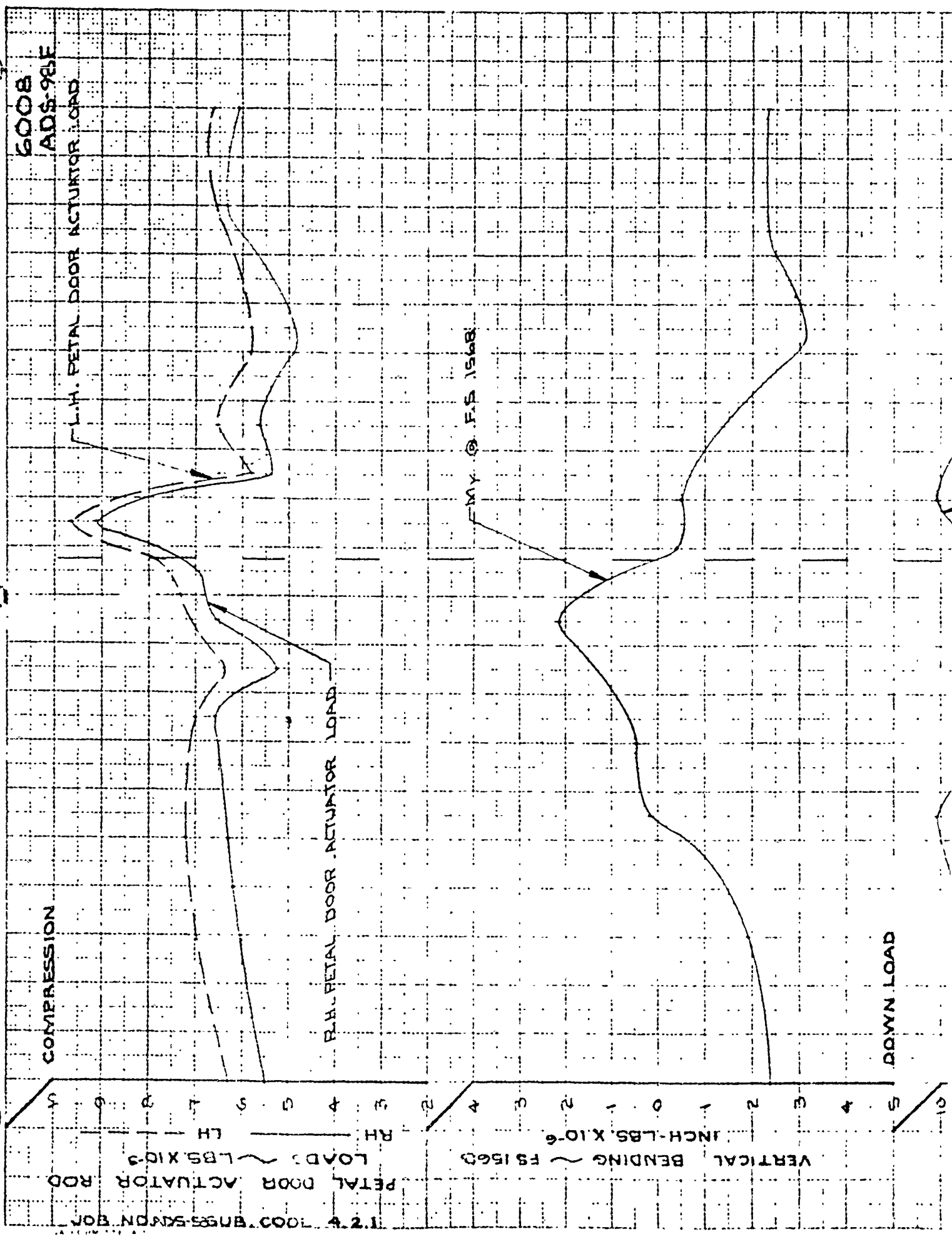


FIGURE D-2CE

6008
ADS-98E



PREPARED BY TED
DATE 6-16-65
CHECKED BY JWD

LICHTSPEED GEORGIA COMPANY
AERIAL DELIVERY AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE /D-128

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-8077 LAC 6008
TEST DATE 6-15-65
FLIGHT 142 DROP NO 20
SHEET 6 OF 7
CARGO WT. 34,960 LBS

NOTE:
SEE FIGURES 2A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

ELAPSED TIME ~ SEC.

FIGURE D-20F

6008
ADS-98F

VERTICAL BENDING ~ F.S. 1048
INCH-LBS. X 10⁻⁶

DOWN LOAD

LOAD RELEASE ~ 3.25 SEC.

MY @ F.S. 1048

LOAD CLEAR OF BUMP

6008
ADS-98G

UP LOAD

SHEAR @ H 44L ~ S/E
LBS X 10⁻³

1.2.4 CODE 4.2.1
NO. ADS-98G SUB. CODE

S/E @ HBL 44L

UP LOAD

BENDING @ HBL 44L ~ M'
INCH-LBS X 10⁻⁶

M' @ HBL 44L

LOAD LEFT @ VS TIP

PREPARED BY **TED**
 DATE **6-16-65**
 CHECKED BY **WUP**

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PART **D-129**

**TIME HISTORY OF AERIAL DELIVERY
 MANEUVER**

MODEL **C-141A**
AF65-5077 **LAC 6008**
 TEST DATE: **6-15-65**
 FLIGHT **~142** **DROP NO. ~20**

SHEET 1 OF 1

CARGO WT. 34,960 LBS

NOTE:
 SEE FIGURE 206 SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

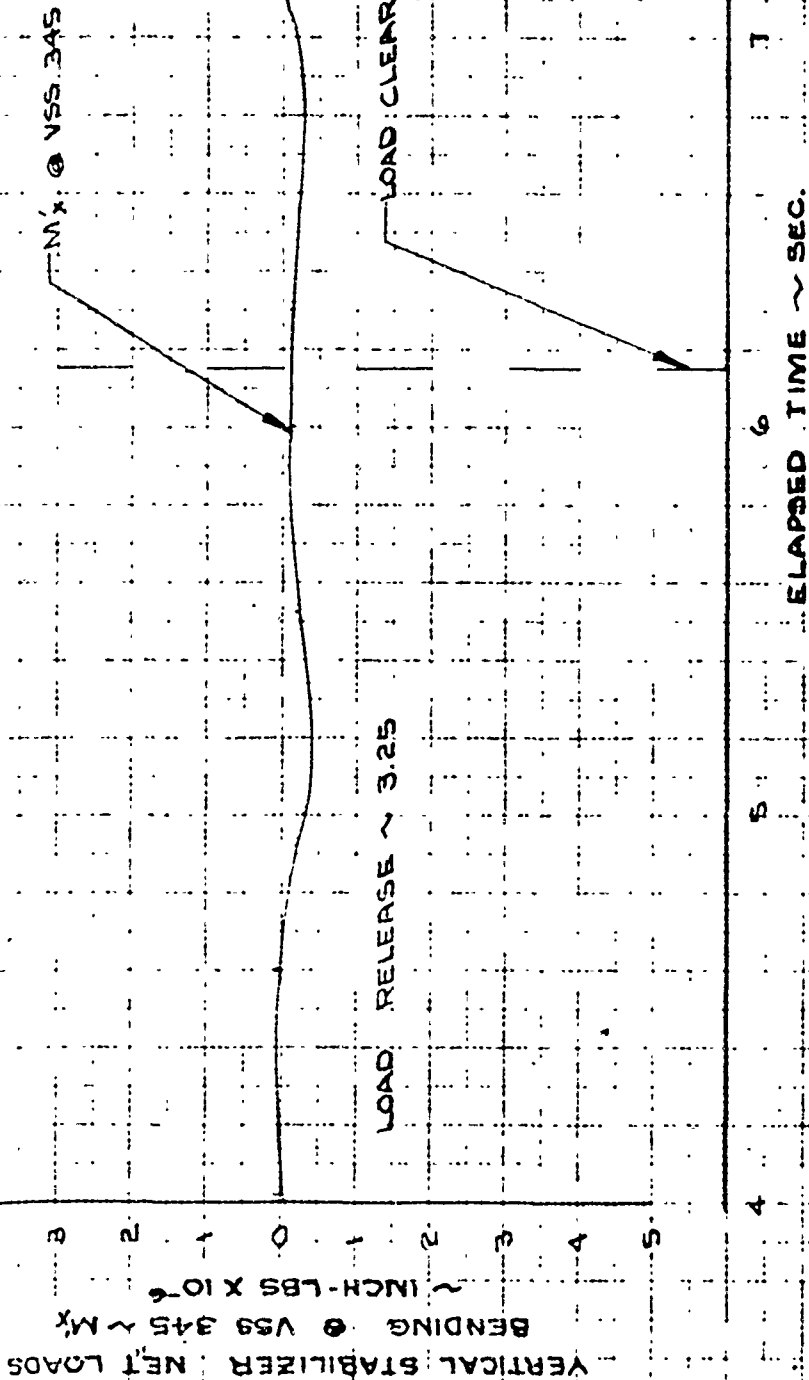


FIGURE 206

**6008
 ADS-98G**

6008
ADS78A

NOSE UP
NOSE LEFT
RIGHT ROLL

25
20
15
10
5
0

124 3003 BMS-415UB CODE 421

AIRCRAFT ATTITUDE - RA, PS, DE, SEC.

$\dot{\phi}$

$\dot{\theta}$

NOSE UP
NOSE LEFT
RIGHT ROLL

25
20
15
10
5
0

124 3003 BMS-415UB CODE 421

AIRCRAFT ATTITUDE - RA, PS, DE, SEC.

$\dot{\phi}$

$\dot{\theta}$

α

LOAD RELEASE

PREPARED BY RSA
DATE 5-12-65
CHECKED BY *[Signature]*

FIELD GEAR & COMPANY
ALL INFORMATION IS UNCLASSIFIED DATE 04-11-2010 BY 60322

REPORT NO. ER 5473
MODEL C-141A
PAGE D-130

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077 LAC 6008

TEST DATE ~ 5-12-65

FLIGHT ~ 123 DROP NO. ~ 21

SHEET 1 OF 5

CARGO WT. 21,350 LBS.

RUN CONDITIONS

1. G.W. ~ 180,800 LBS
2. C.G. PRIOR TO DROP ~ 33.4% MAC
3. C.G. AFTER DROP ~ 29.9% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.25 (4 ENGINES)
7. \dot{A} ~ 0.5 DEG. (A/C N.D.)

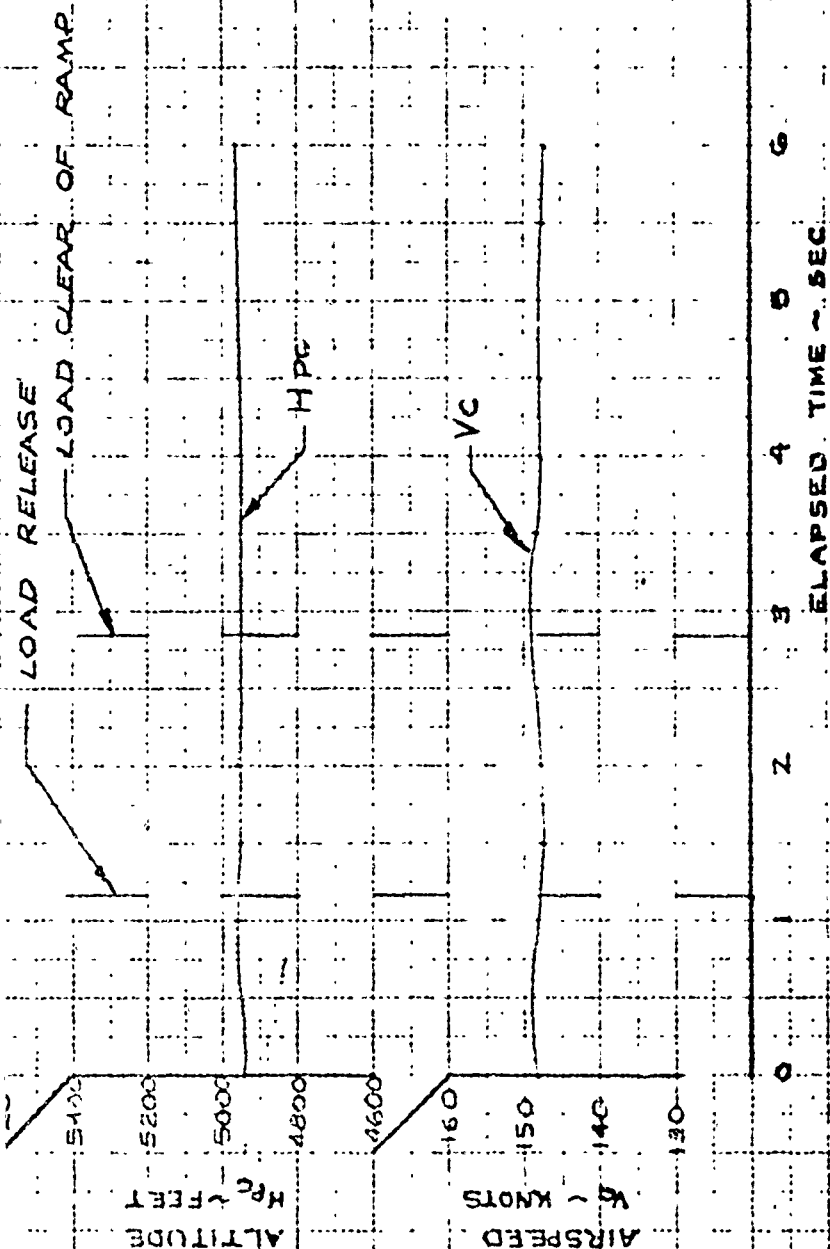
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 1018
VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE / CARGO WT ~ 1.09
4. EXTRACTION LINE LENGTH ~ 140 FT.

FIGURE D-21A



6008

ADS 78A

REVISED 12-15-65
MBH

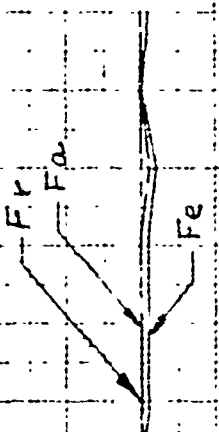
6008
ADS 78B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0
10
20
30
40

CONTROL FORCES ~ LBS.

121 2403 BBS + 52V ON 800



T.E. UP

LEFT AILERON POSITION ~ DEG.

5
0
5
10
15
20

50

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-143A

AF 63 8077

LAC 600

TEST DATE ~ 5-12-65

FLIGHT 123

..DROP NO -21

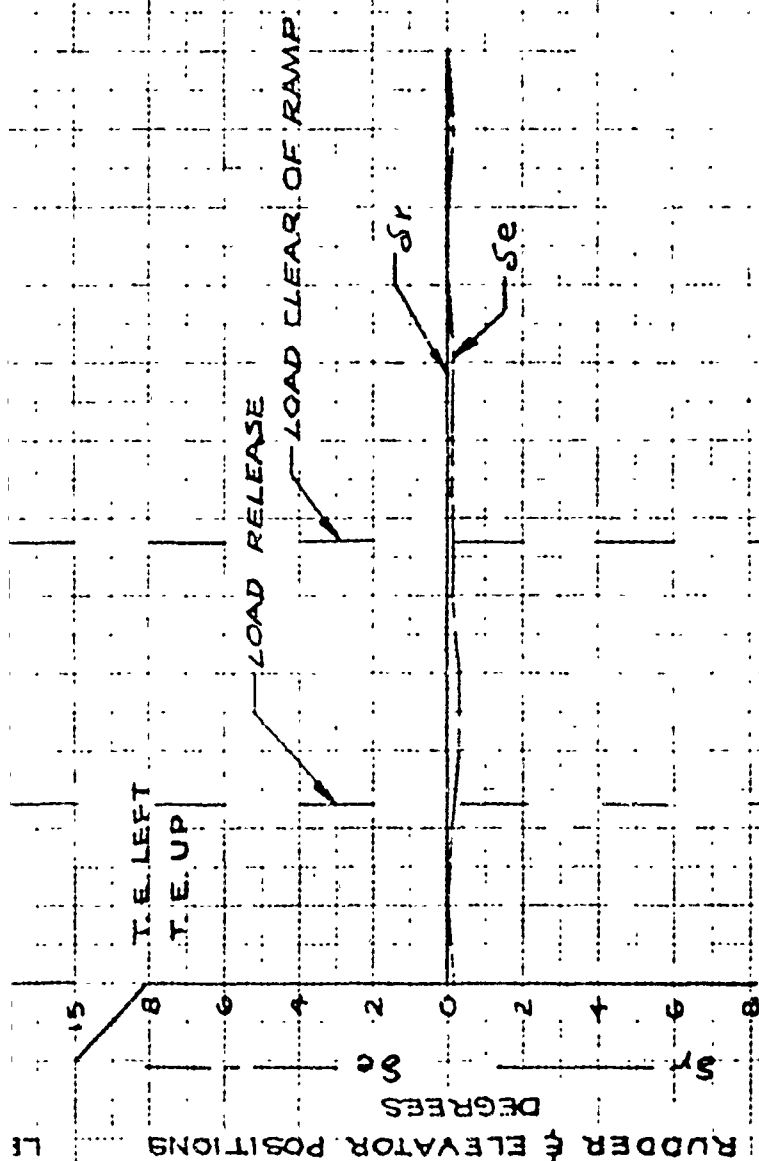
SHEET 2 OF 5

CARGO WT. 21350 LBS

NOTE:
SEE FIGURE 2 SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-213

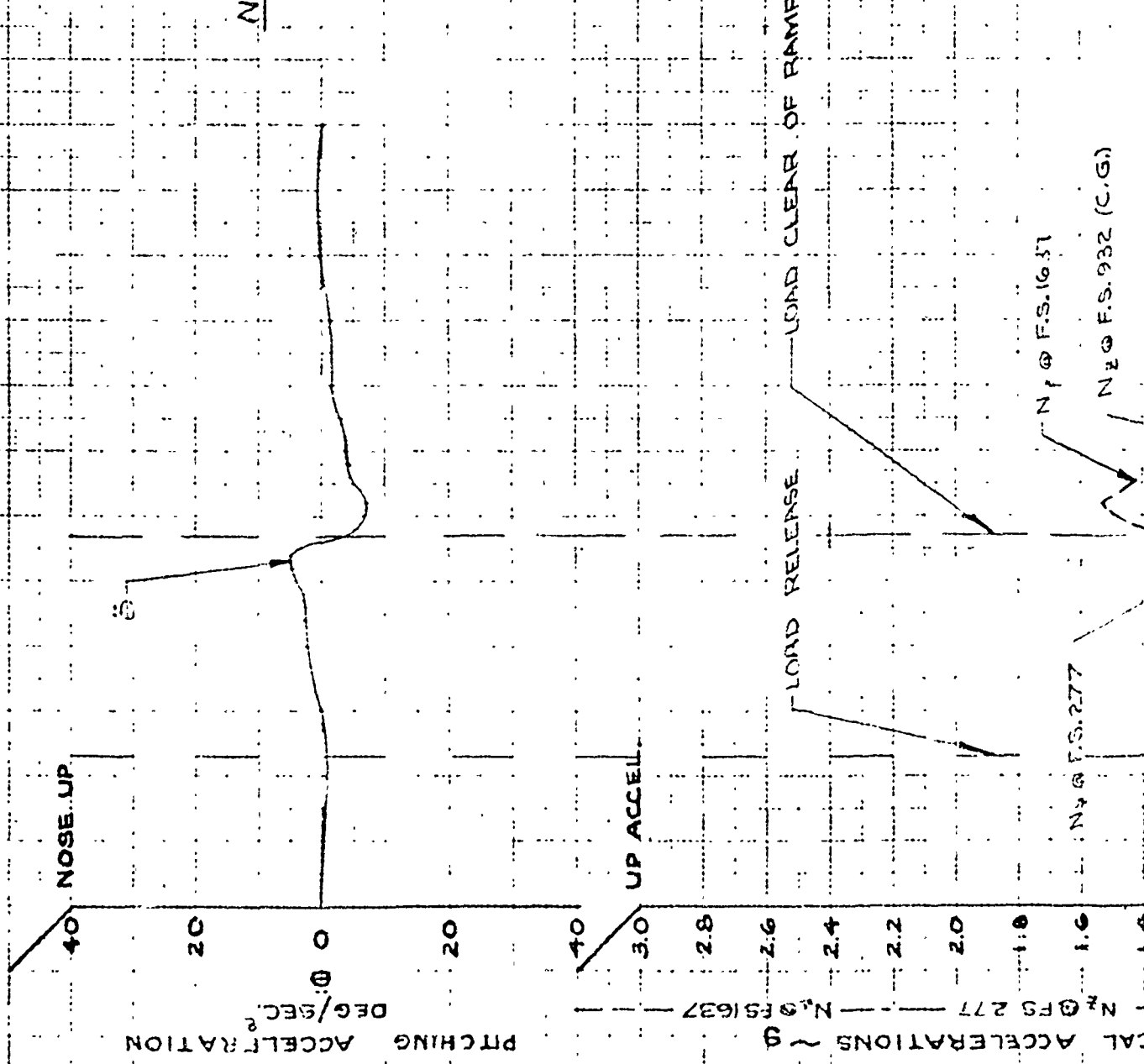
6008
ADS 782



600B
ADS-78C

NOTE:
 $\dot{\theta}$ CALCULATED FROM N_3 DATA.

JOB NO. ADS-41 SUB. CODE 4.2.1



N_1 @ F.S. 16.57
 N_2 @ F.S. 932 (C.G.)

N_3 @ F.S. 277

CAL ACCELERATIONS ~ g
— N_3 @ F.S. 1637 —
— N_2 @ F.S. 277 —

TE.D.
DATE 5-12-65
fat

REPORT NO. ER 5473
MODEL C-141A
D-132

13.2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-8077

LAC 6008

TEST DATE: 5-12-65

FLIGHT-123

DROP NO-21

SHEET 3 OF 5

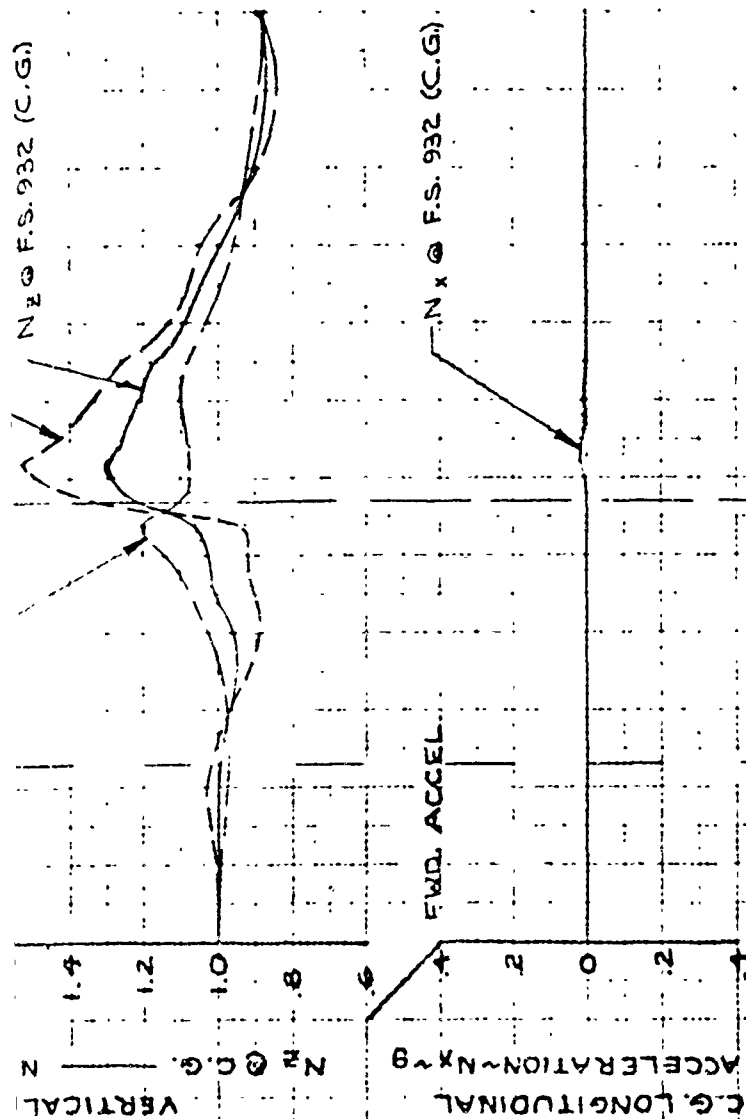
CARGO WT. 21,350 LBS

NOTE:
SEE FIGURE D-21A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

12
11
10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME ~ SEC.

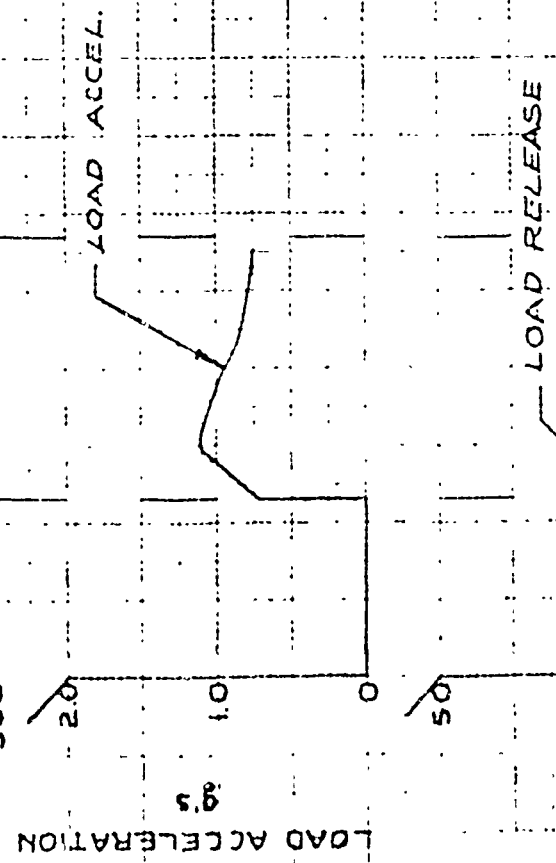
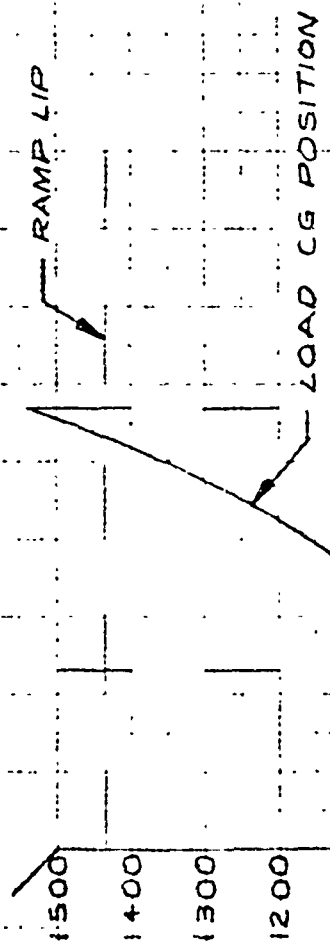
FIGURE D-21C

6008
ADS-78C



6008
ADS78D

JOB NO. ADS 41 SUB CODE 421



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE DATA

PREPARED BY 25A
DATE 5-12-65
CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-133

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE ~ 5-12-65

FLIGHT ~ 123

DROP NO. ~ 21

SHEET 4 OF 5

CARGO WT. 21,350 LBS

NOTE:

SEE FIGURE D-21A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

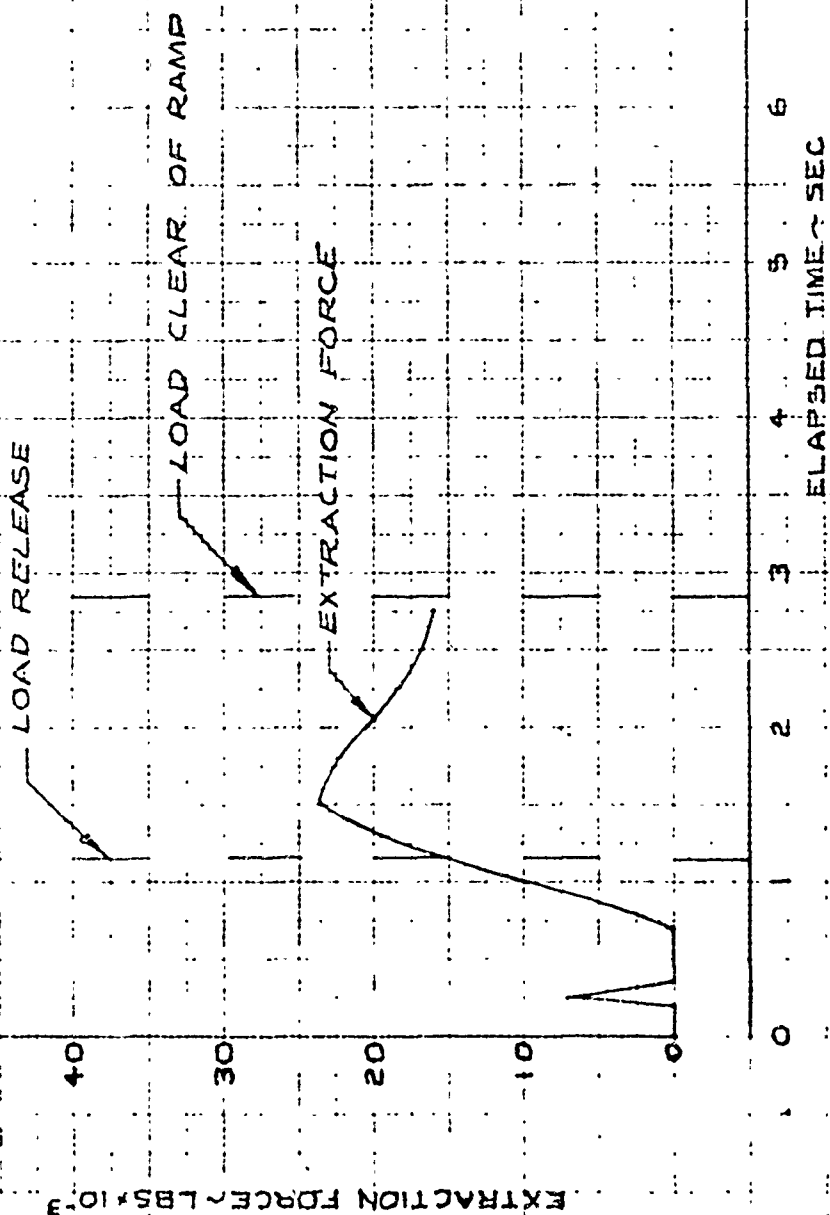


FIGURE D-21D

6008
ADS 78 D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM
Checked			TITLE	Model C-141A		
Approved				Report No ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-2077

LAC 6003

FLIGHT 123

TEST DATE 5-12-65

G.W. 188,800 LBS. A/S 150 KCAS

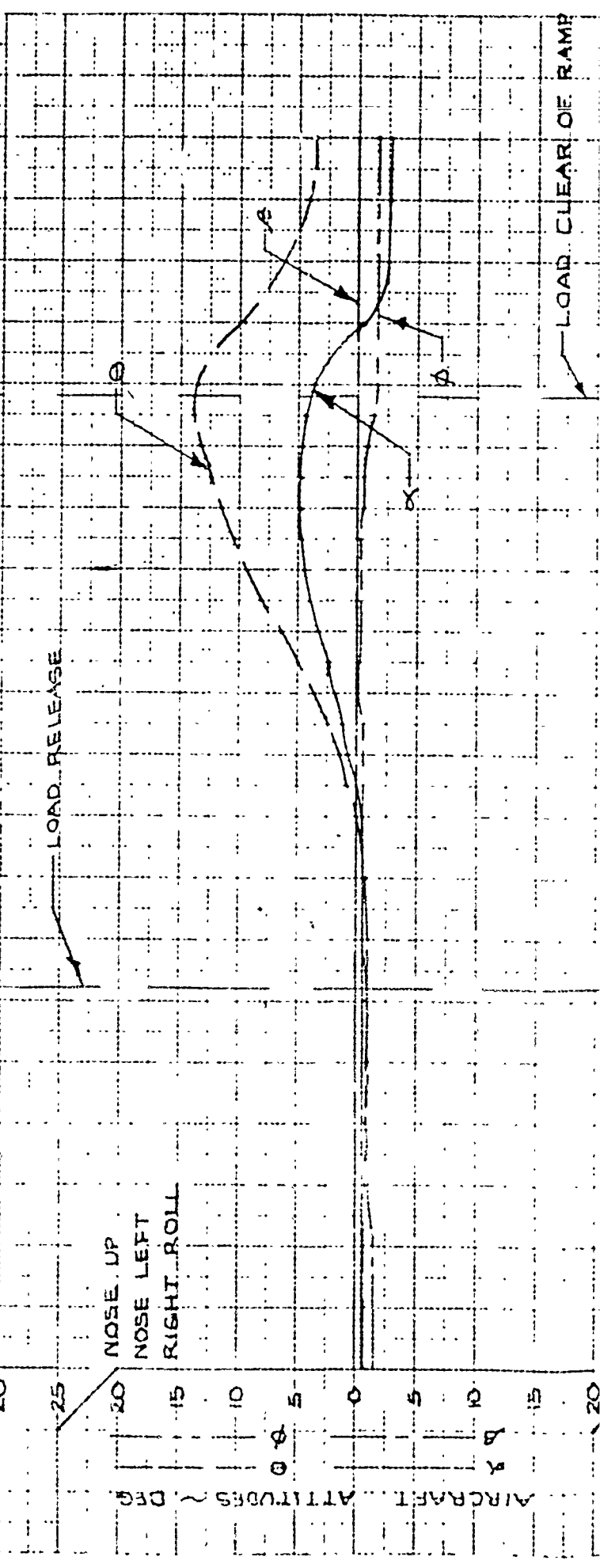
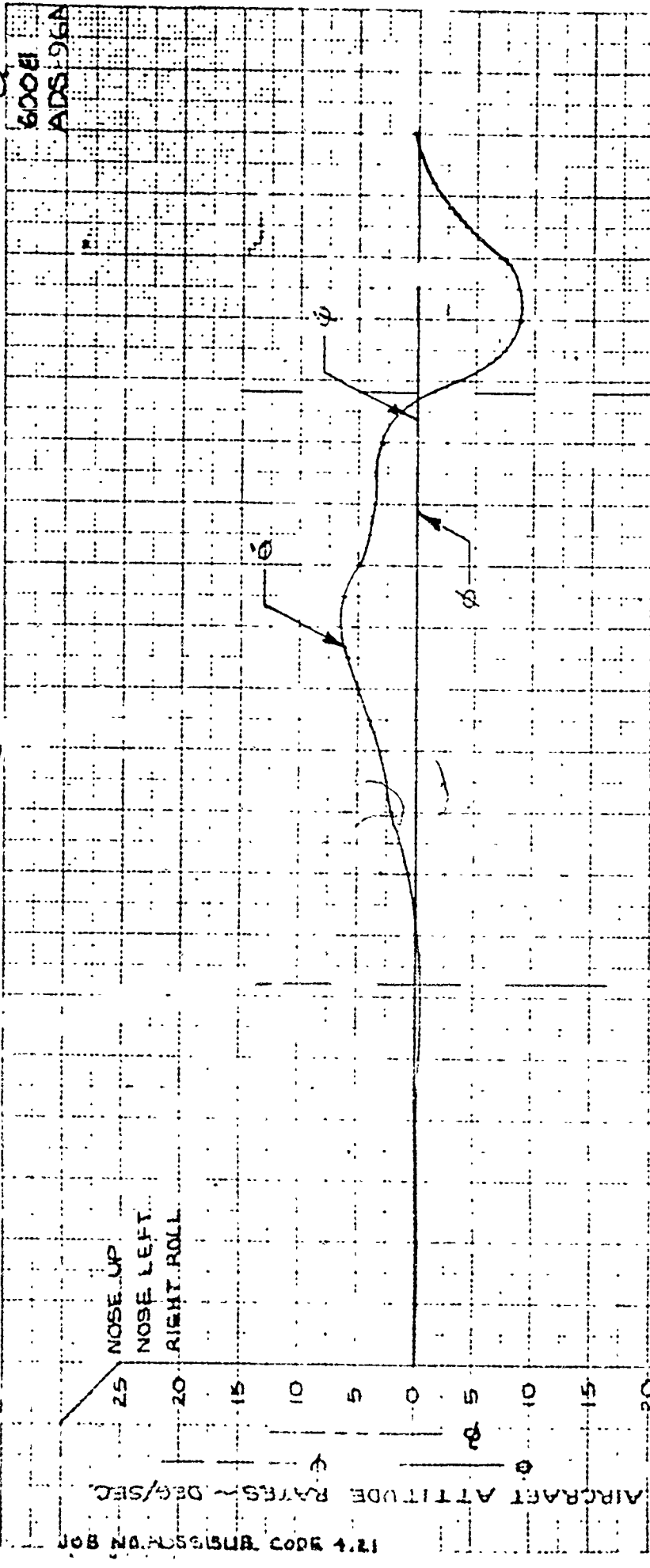
C.G. %MAC ALT. ~ 4,960 FT.

DROP WT. ~ 21,350 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	1.0
2	ANGLE OF PITCH	"	1.8
3	C.G. VERT. ACCEL.	g's	1.304
4	C.G. LONG. ACCEL.	"	0.022
5	VERT. ACCEL. @ F.S. 277	"	1.203
6	VERT. ACCEL. @ F.S. 1637	"	1.531
7	VERT. BEND. @ F.S. 1048	IN.-LBS X 10 ⁻⁶	17.62
8	VERT. BEND. @ F.S. 1568	"	1.03
9	BENDING ~ M'x @ HBL 44L	"	0.309
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	2.31
11	PITCH TRIM ACTUATOR ~ S _z	"	1.97
12	R.H. RAMP ACTUATOR LOAD	"	0.39
13	L.H. " " " "	"	0.29
14	R.H. SPIDER ARM LOAD	"	6.308
15	L.H. " " " "	"	6.120
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.710
17	L.H. " " " "	"	6.564
18	BENDING ~ M'x @ VSS	IN.-LBS. X 10 ⁻⁶	0.033
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	3.555
20	L.H. " " " "	"	3.379
21	R.H. RAMP HINGE DRAG LOAD	"	1.989
22	L.H. " " " "	"	1.898
23	RAMP HINGE TOTAL SIDE LOAD	"	0.306
24	EXTRACTION CHUTE FORCE	"	23.5
25	CARGO LONG. ACCEL.	g's	1.10

FIG. D-21E
ADS-78E

60081
ADS-96A



PREPARED BY FCW
 DATE 6-9-65
 CHECKED BY JED

LOCKHEED GEORGIA COMPANY
 LOCKHEED GEORGIA AIR RACE CORPORATION

REPORT NO ER 5473
 MODEL C-141A
 PAGE D-135

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF638077 LAC 6008
 TEST DATE 6-9-65
 FLIGHT 139 DROP NO. 22

SHEET 1 OF 7

CARGO WT. 34400 LBS.

RUN CONDITIONS

1. G.W. ~ 195300 LBS.
2. C.G. PRIOR TO DROP ~ 23.3% MAC
3. C.G. AFTER DROP ~ 30.0% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.29
7. $\alpha_H \sim 0.25$ DEG. (A/C ND)

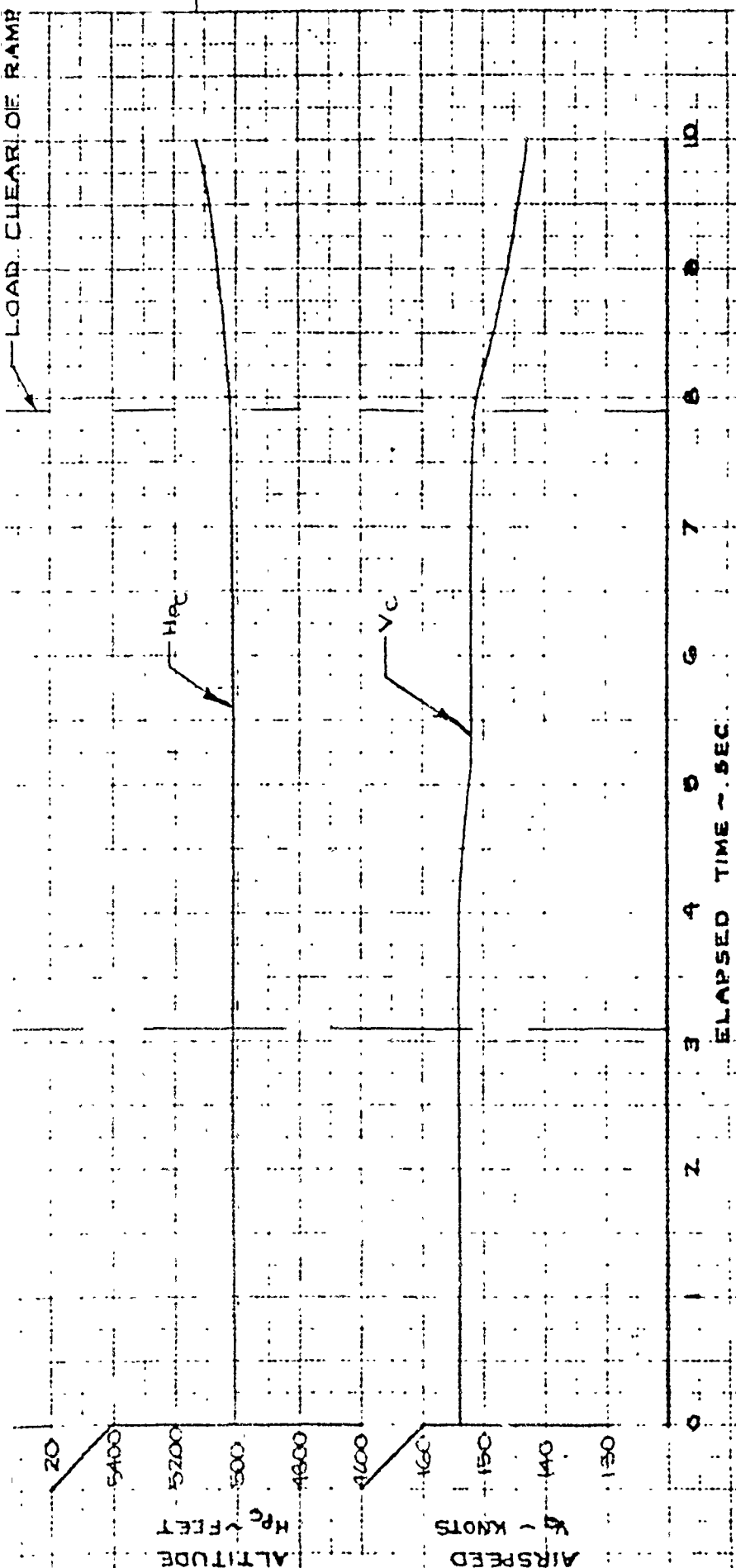
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F2 987
 VERT. ~ WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28'
3. RATED CHUTE FORCE/CARGO WT. 1.40
4. EXTRACTION LINE LENGTH ~ 100'

FIGURE 2-22A



6008

ADS-3A

REVISED 12-15-65
 MBH



PREPARED BY FCW

DATE 6-11-65

CHECKED BY JCH

REPORT NO. ER 5473

MODEL C-141A

D-136

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 6-9-65

FLIGHT 139

DROP NO 22

SHEET 2 OF 7

CARGO WT. 34400 LBS

NOTE:

SEE FIGURE 2-22B SHEET 1 OF 2
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC.

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONS
DEGREES

FIGURE 2-22B

6008
ADS-96B

6008
AOS 980

NOTE: θ CALCULATED FROM N_z DATA

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL

CAL ACCELERATIONS ~ g
N_z @ F.S. 277
N_z @ F.S. 1637

LOAD CLEAR OF RAMP

LOAD RELEASE

N_z @ F.S. 1637

N_z @ F.S. 932 (C.G.)

JOB NO. ADV SUB CODE 4.2.1

DATE 6-16-65
 CHECKED BY JED

ER 5473
 G-141A
 137

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AP 63-B077 LAC 6008
 TEST DATE 6-9-65
 FLIGHT ~ 139 DROP NO ~ 22
 SHEET 3 OF 7
 CARGO WT. 34,400 LBS.

NOTE:
 SEE FIGURE D-22C SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

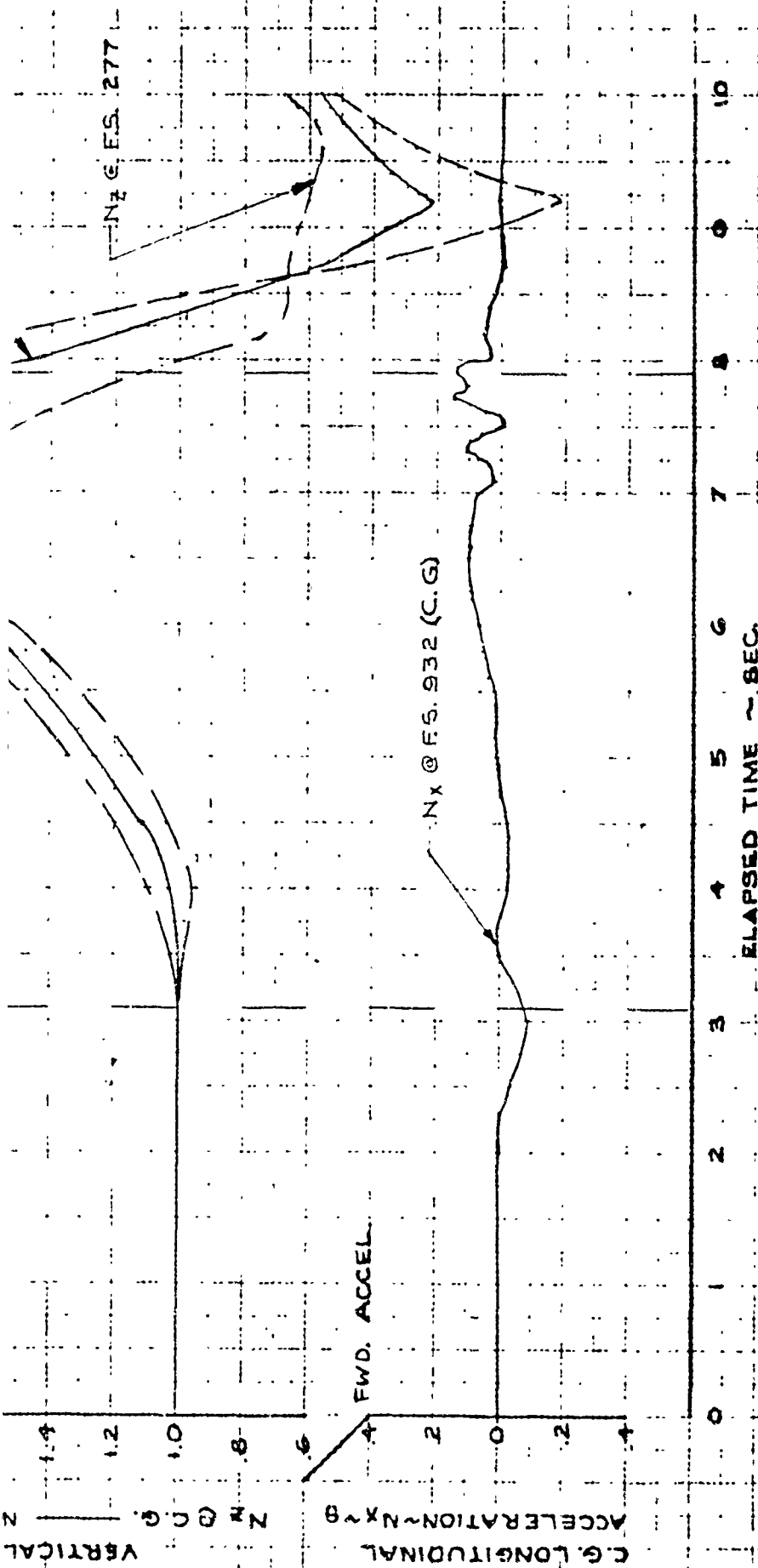


FIGURE D-22C

6008
 ADS-966

6008

ADS-96D

JOB NO. ADS-51 SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

10⁻³

RAMP LIP

LOAD C.G. POSITION

LOAD CLEAR OF RAMP

LOAD RELEASE

LOAD ACCEL

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA, AND LOAD C.G.
POSITION DATA.

EXTRACTION FORCE

1500

1400

1300

1200

1100

1000

900

800

700

600

500

20

10

0

50

40

PREPARED BY FCW
DATE 6-9-65
CHECKED BY JWD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE 2-138

134

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 6-9-65

FLIGHT: 139

DROP NO. 22

SHEET 4 OF 7

CARGO WT. 34400 LBS

NOTE:

SEE FIGURE D-22D, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

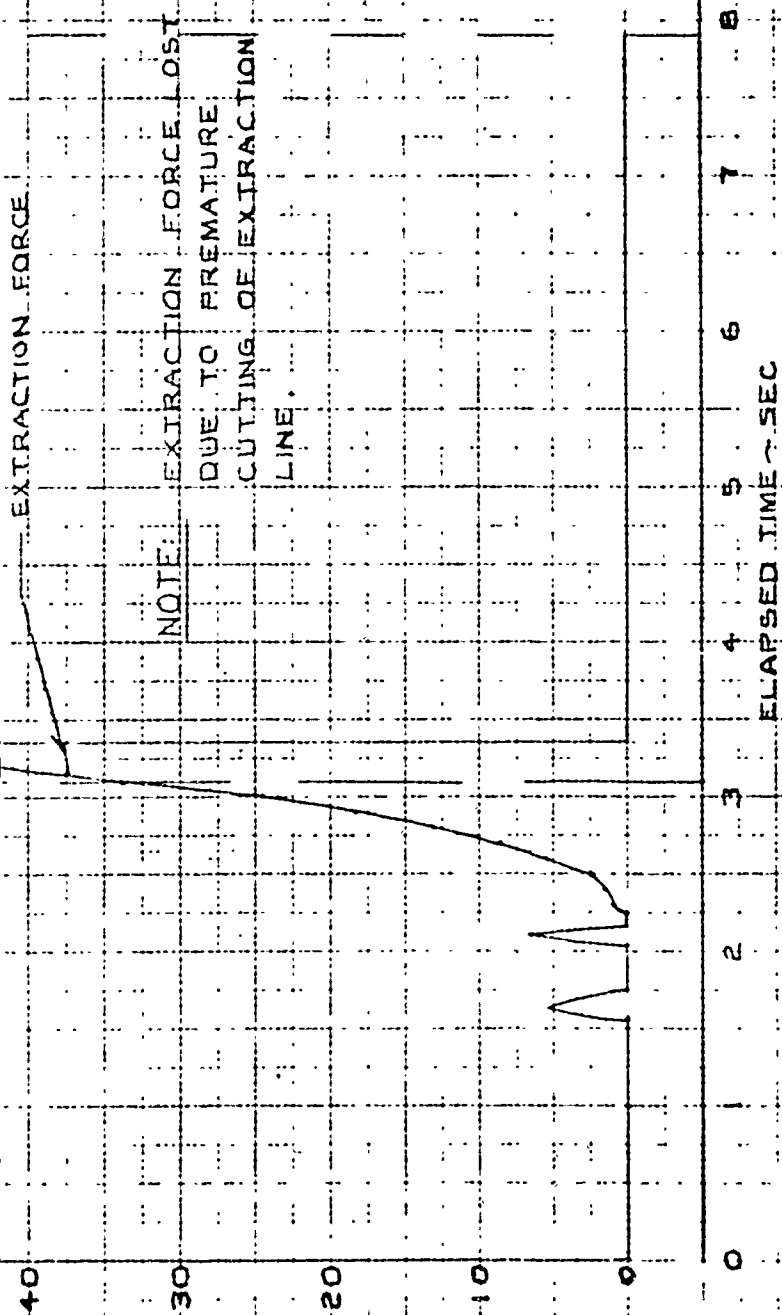
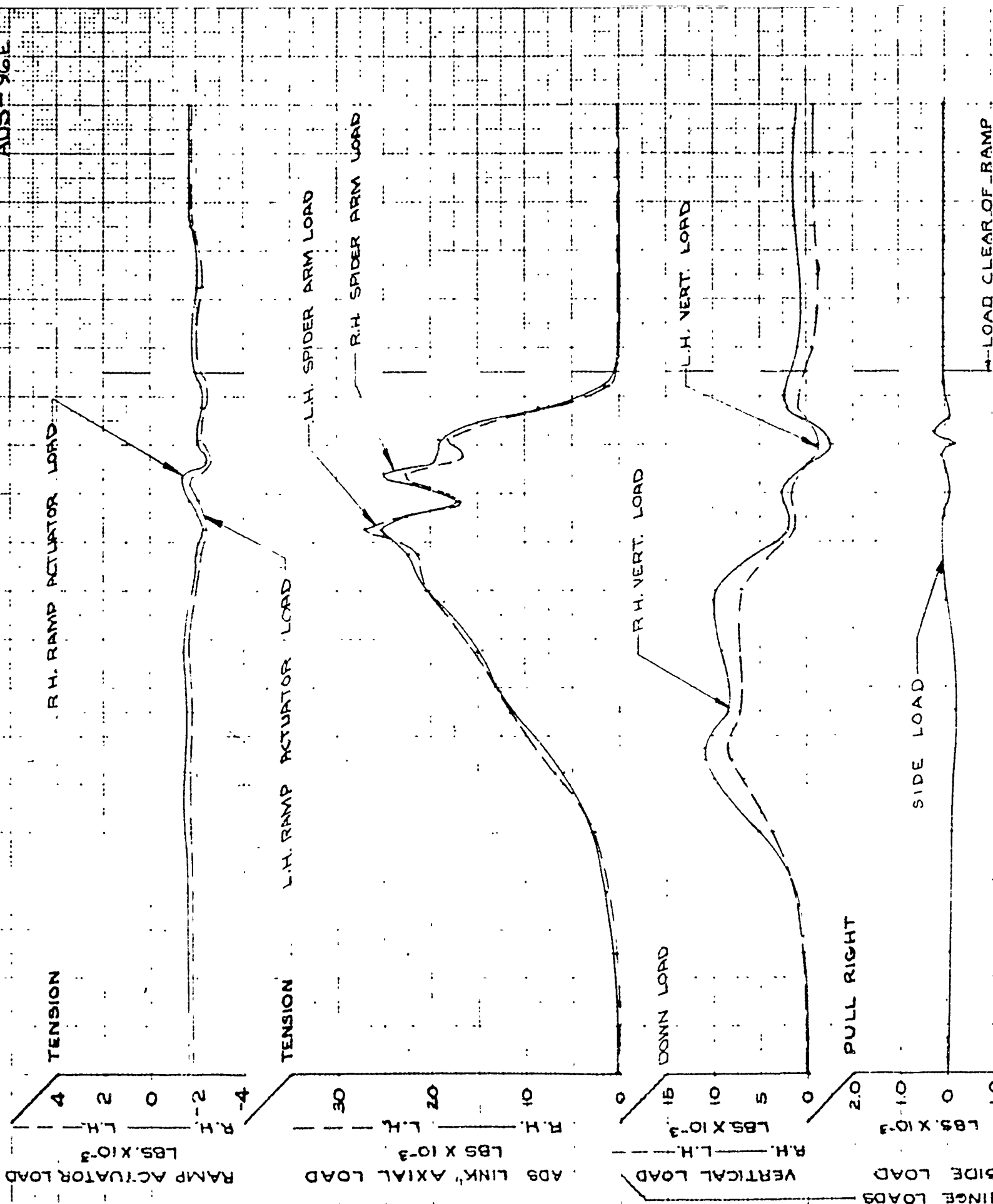


FIGURE D-22D

6008
ADS-36D



6008
ADS-96E

PREPARED BY **TED**
DATE **6-11-65**
DRAWN BY **TD**

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **D-139**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF **63-8077**

LAC **6008**

TEST DATE **6-9-65**

FLIGHT **~139**

DROP NO. **~22**

SHEET **5** OF **7**

CARGO WT. **34,400 LBS**

NOTE:
SEE FIGURE **D-22A** SHEET **1** OF **7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

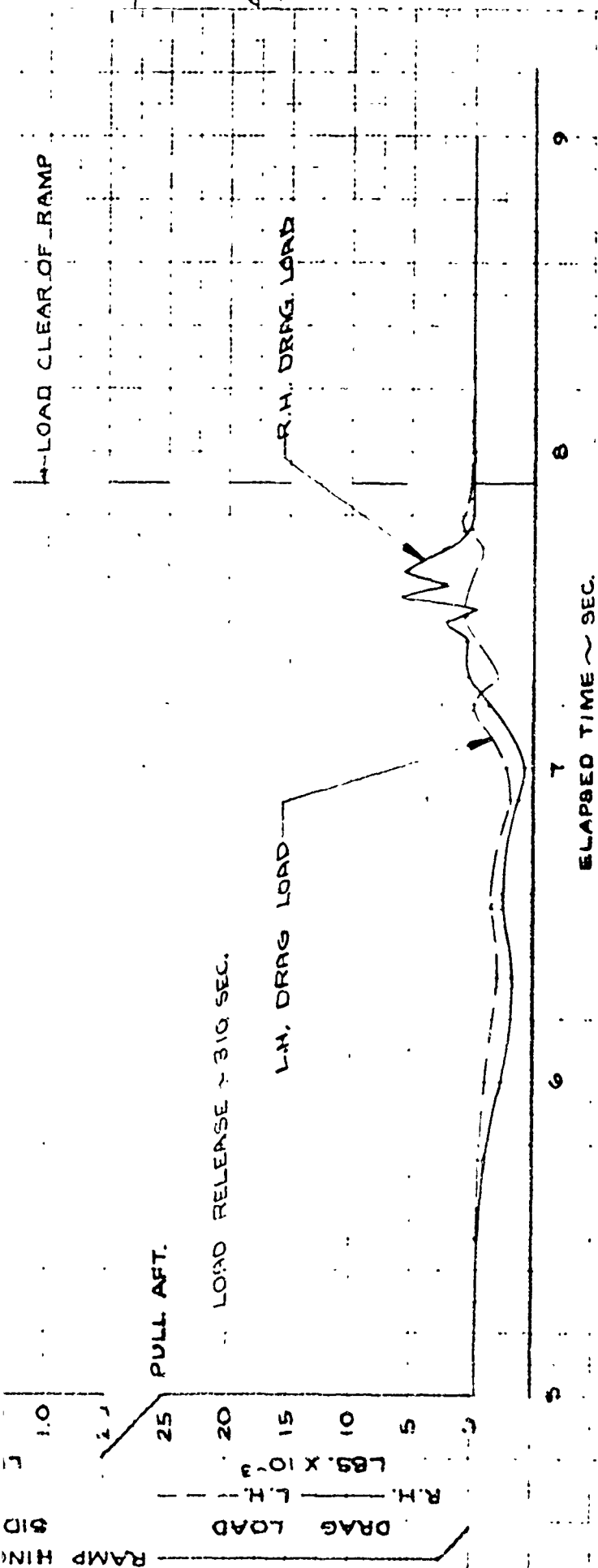


FIGURE **D-22 E**

6008
ADS-96E

6008
ADS-96F

COMPRESSION

L.H. PETAL DOOR ACTUATOR LOAD

R.H. PETAL DOOR ACTUATOR LOAD

MY @ F.S. 150B

DOWN LOAD

MY @ F.S. 104B

PETAL DOOR ACTUATOR RCD

VERTICAL BENDING ~ FS 150B

INCH-LBS. X 10⁻⁶

RH LOADS ~ LBS X 10⁻³

1.2.4. 1003. SUBS. CODE 4.2.1

JOB NO. ADS-515UB

LAUNCH 1003

PREPARED BY: TED
DATE: 6-11-65
CHECKED BY: JMD

LOCKHEED GEORGIA COMPANY
AERONAUTICAL ENGINEERING DIVISION

REPORT NO: ER 5473
MODEL: C-141A
PAGE: D-140

140

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 6-9-65
FLIGHT ~ J39 DROP NO+22

SHEET 6 OF 7

CARGO WT. 34,400 LBS

NOTE:
SEE FIGURE D-22A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

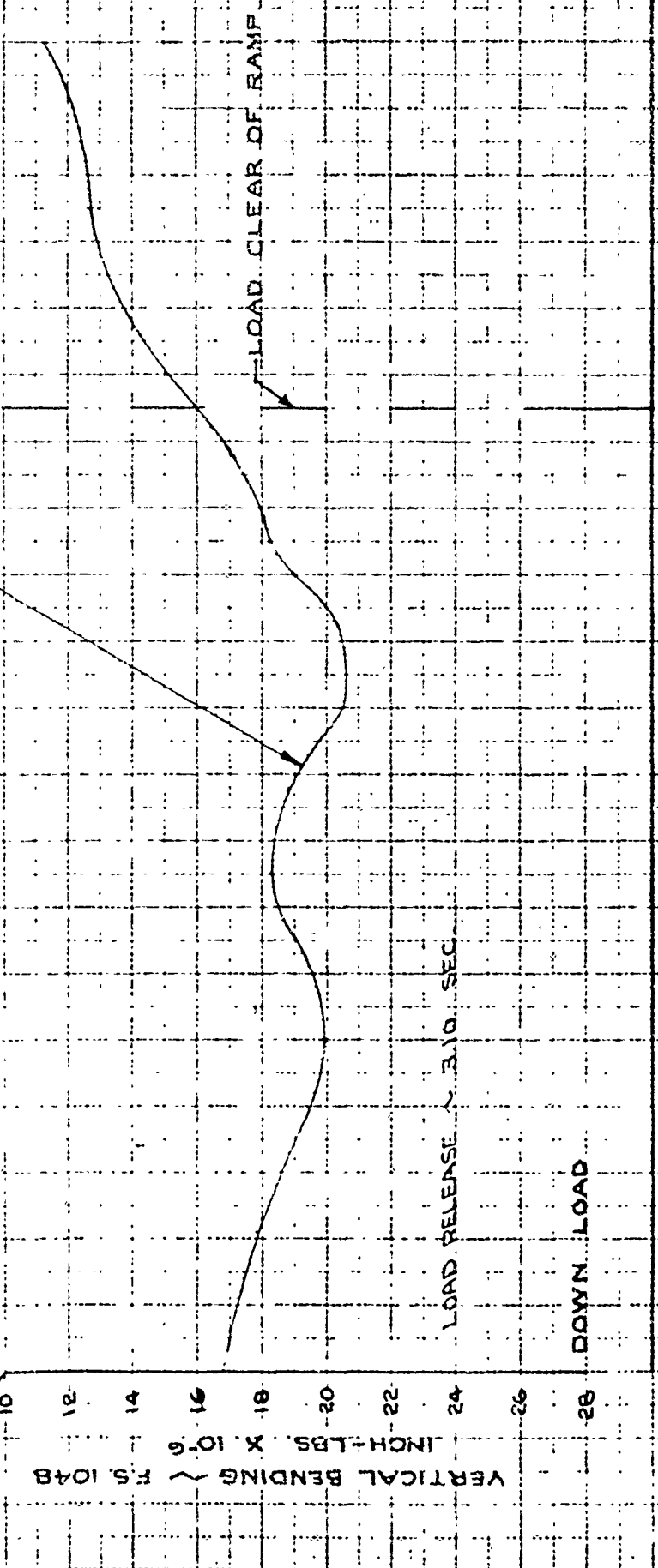
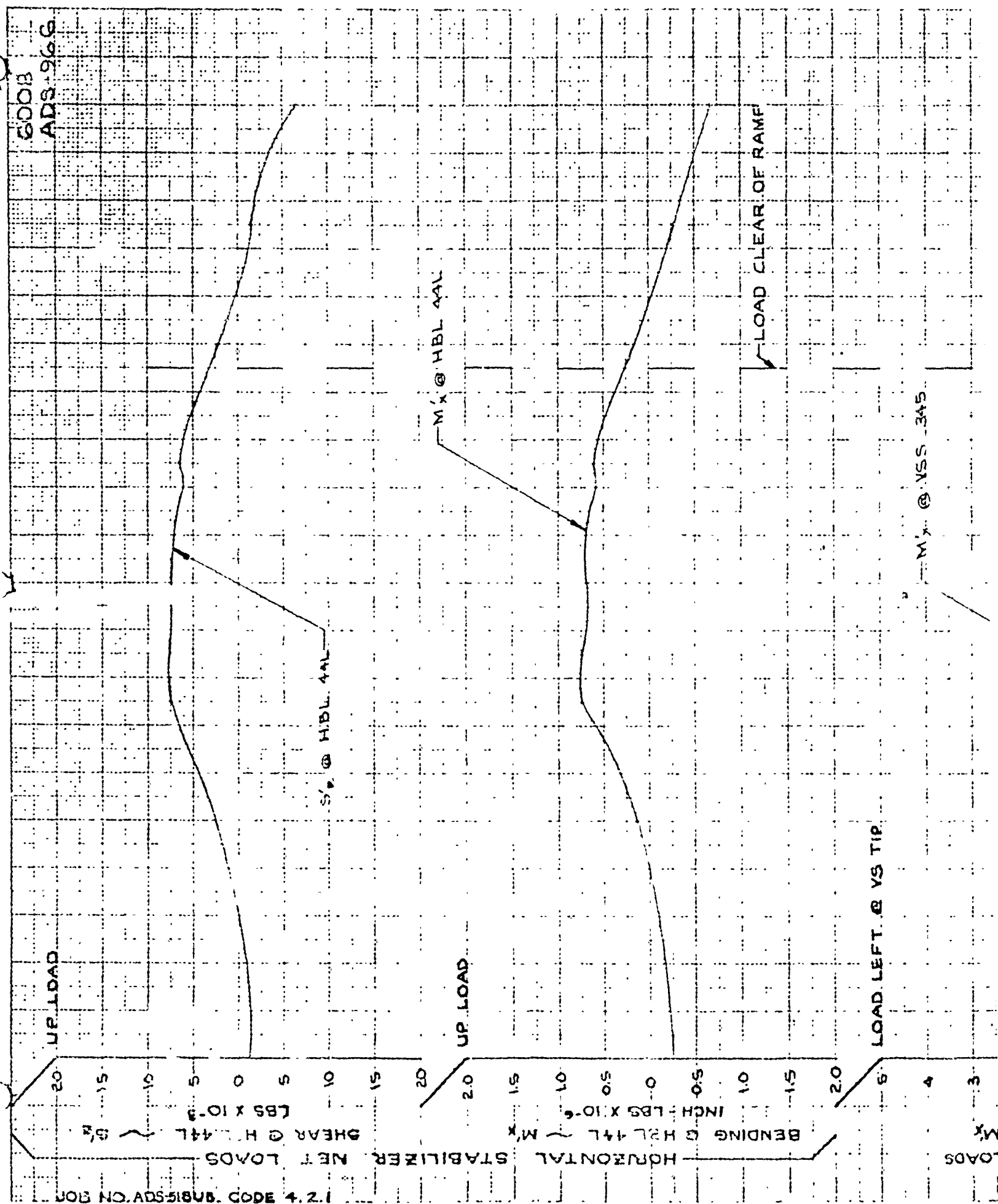


FIGURE D-22F

6008
ADS-96F

6008
ADS-966



1.2.4 EDO518 SUB CODE 4.2.1



PREPARED BY TEO

DATE 6-11-65

REVIEWED BY JSD

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AERONAUTICAL CORPORATION

REF ID: ER 5473

MODEL C-141A

PAGE D-141

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141

AF63-8077

LAC 6008

TEST DATE: 6-9-65

FLIGHT-139

DROP NO. 22

SHEET 1 OF 1

CARGO WT. 34 400 LBS

NOTE:

SEE FIGURE 2-22G SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

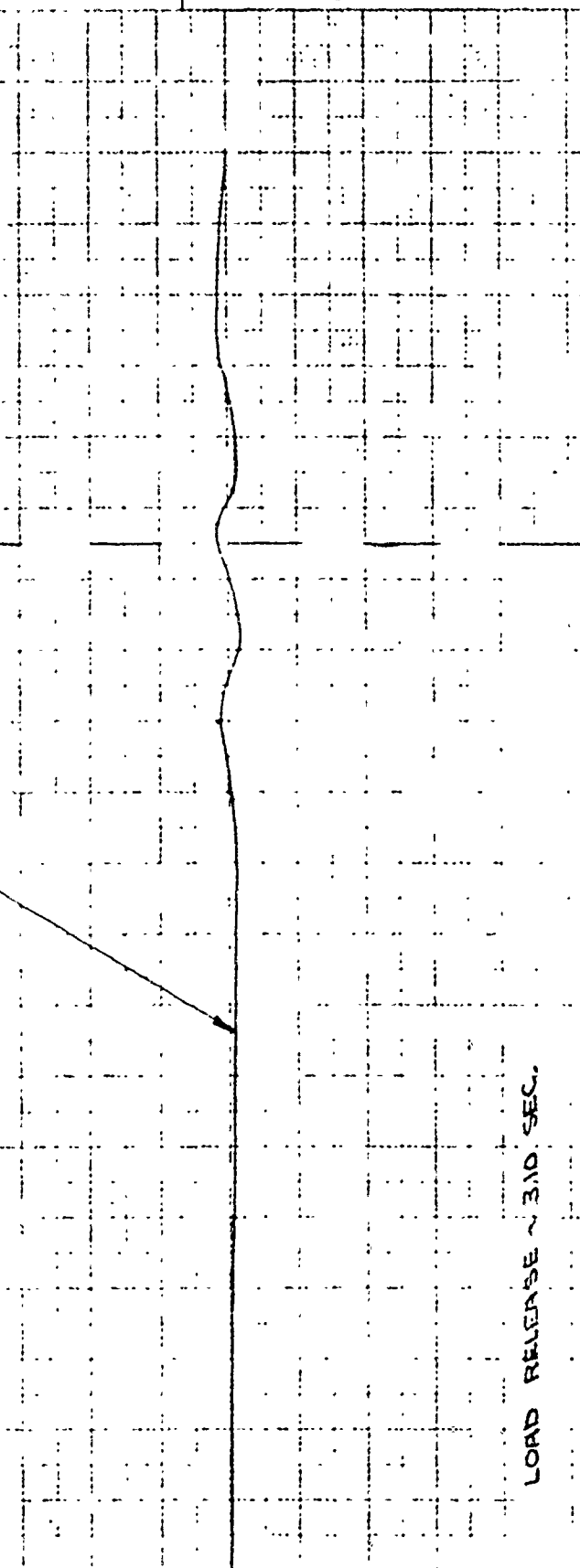
ELAPSED TIME ~ SEC.

LOAD RELEASE ~ 310 SEC.

FIGURE 2-22G

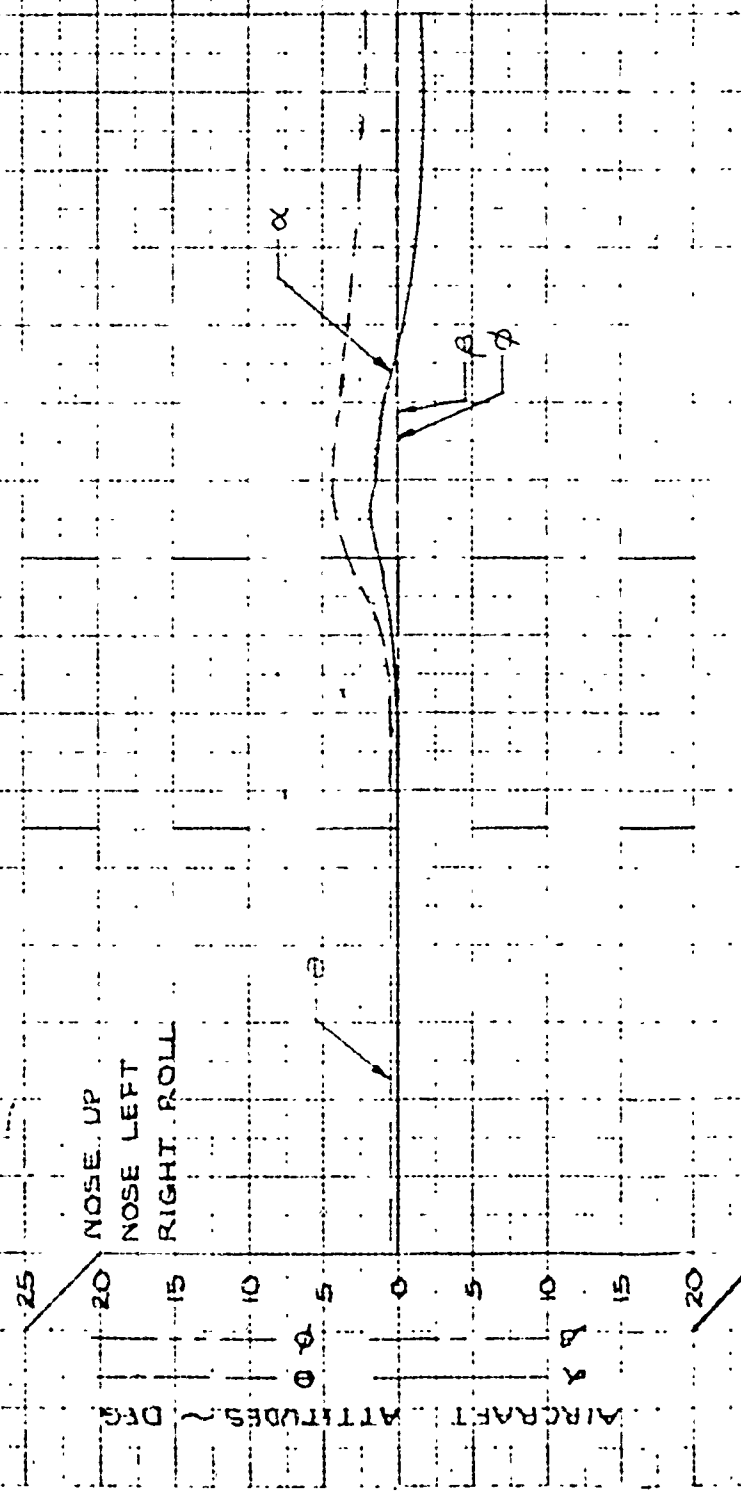
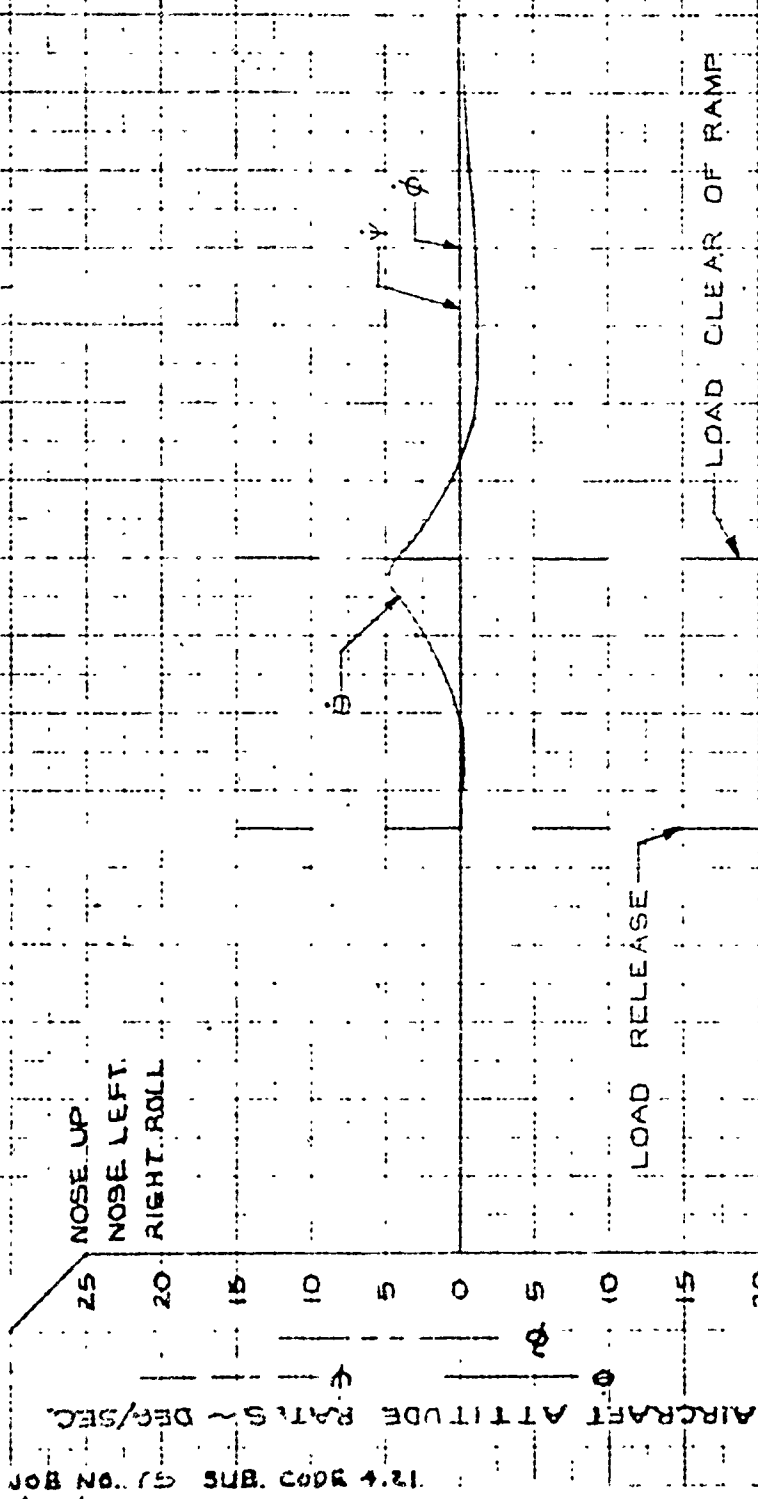
6008
ADS-96G

VERTICAL STABILIZER NET LOADING
BENDING @ Y59 345 ~ MX
~ INCH-LBS X 10⁻⁶



6008

ADS152A



12.4 3400 INH G. ON BOB
SUB. CODE 4.21

12.4 3400 INH G. ON BOB
SUB. CODE 4.21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL-G-HIA

AF6389 IT

LAC 6008

TEST DATE E-23-65

FLIGHT 168

DROP NO. 22R

SHEET 1 OF 2

CARGO WT. 35.050 LBS.

RUH CONDITIONS

1. G.W. ~ 193,800 LBS.
2. C.G. PRIOR TO DROP ~ 33.7% MAC
3. C.G. AFTER DROP ~ 30.6% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24
7. TH ~ 0.65 ND.

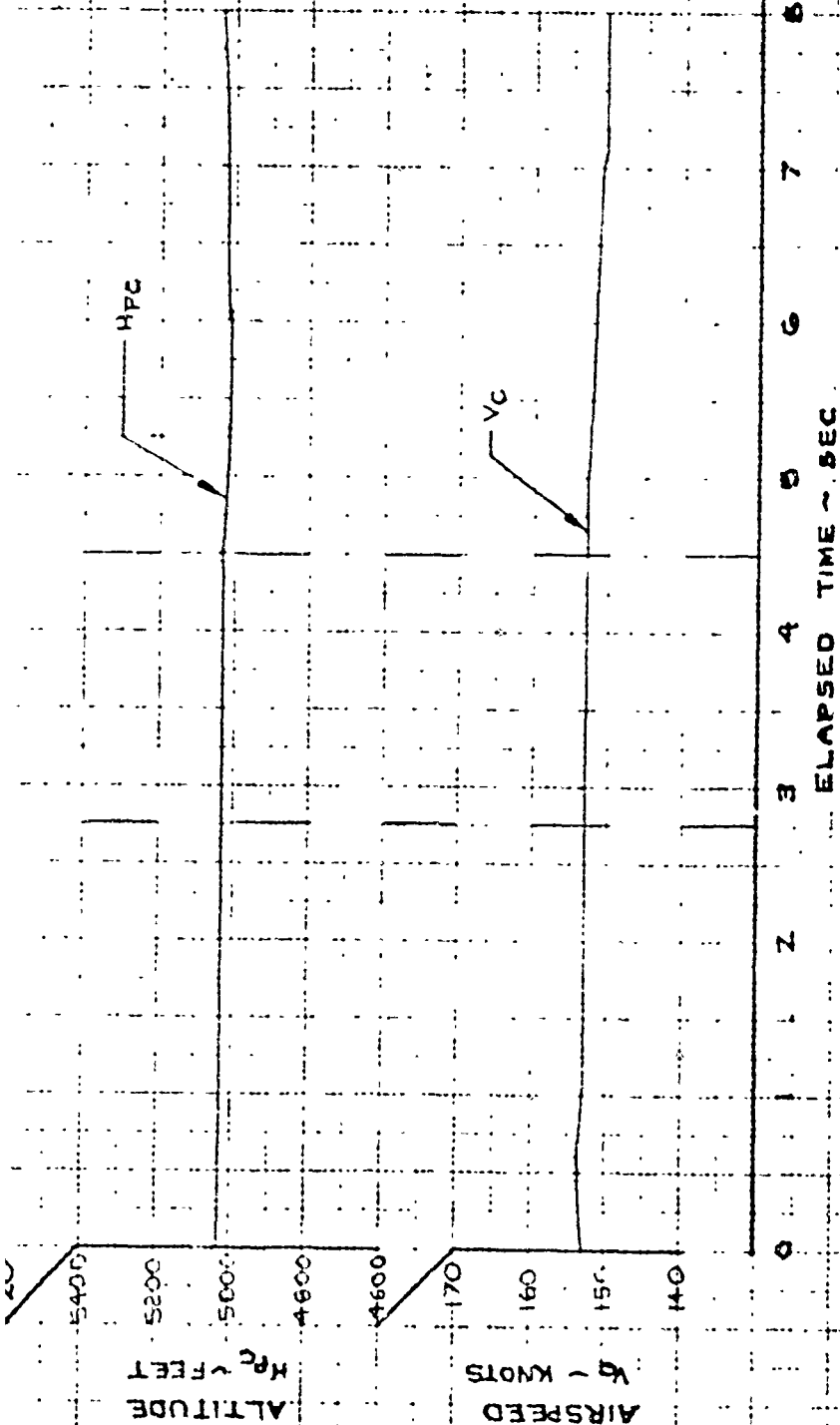
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ FS 986
VERT. ~ WL 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 88 FT. DIA.
3. RATED CHUTE FORCE/CARGO WT. IS
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D-23A



600B

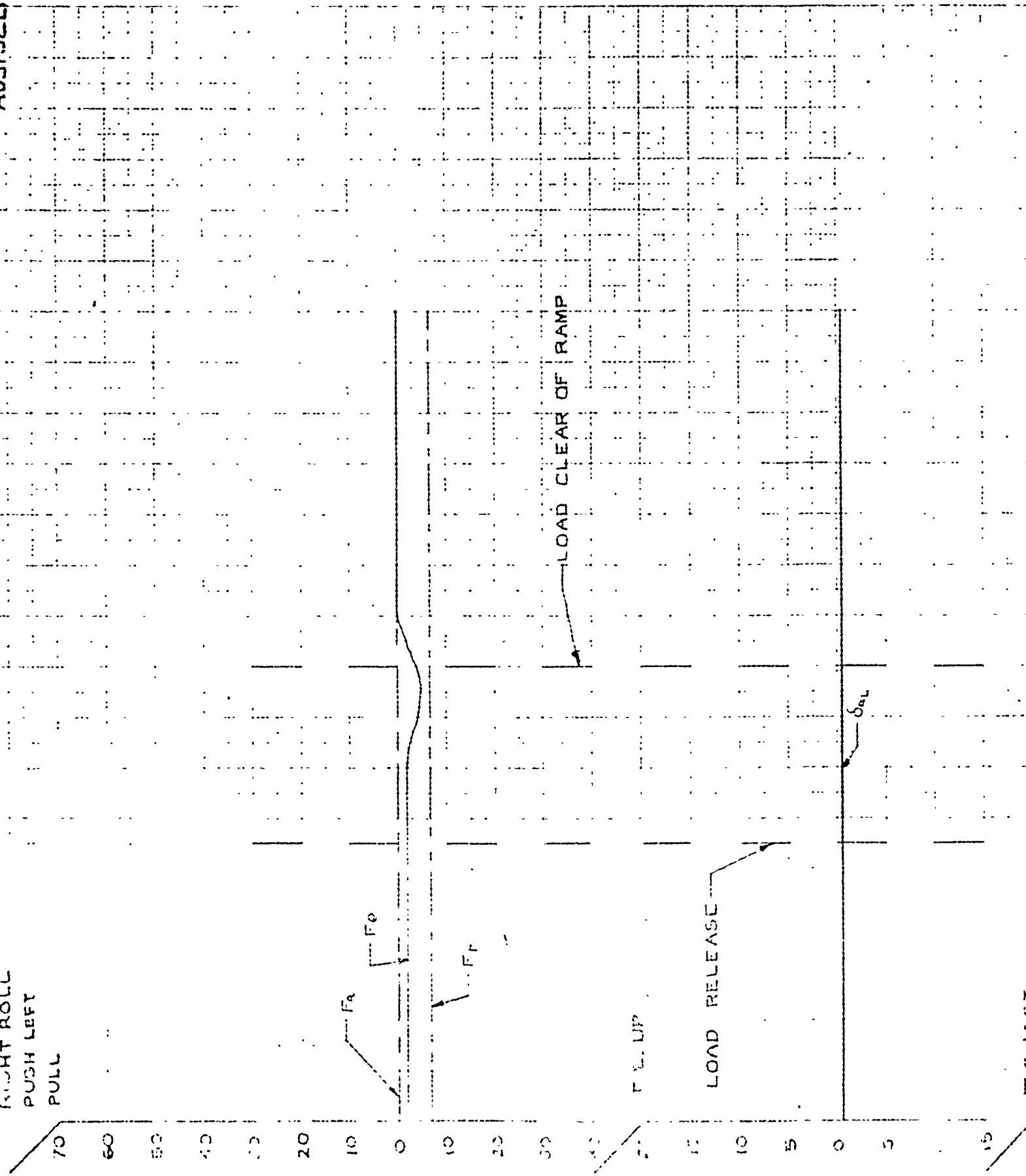
ADS 52A

REVISED 12-16 65
MBH

6028
A051528

RIGHT ROLL
PUSH LEFT
PULL

LEFT ANGLE OF ROLL
CONTROLLED
PULL RELEASE



PREPARED BY MBH

DATE 8-23-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

MODEL

PAGE

ER 5473

C-141A

D-143

1
P
11

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 8-23-65

FLIGHT 168

DROP NO 22R

SHEET 2 OF 7

CARGO WT. 35,050 LBS.

NOTE:

SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

0
1
2
3
4
5
6
7
8
9

T.E. LEFT
T.E. UP

5 4 3 2 1 0 1 2 3 4 5

DEGREES

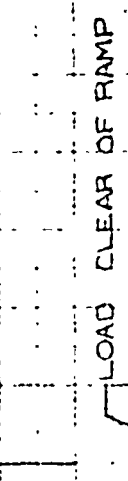
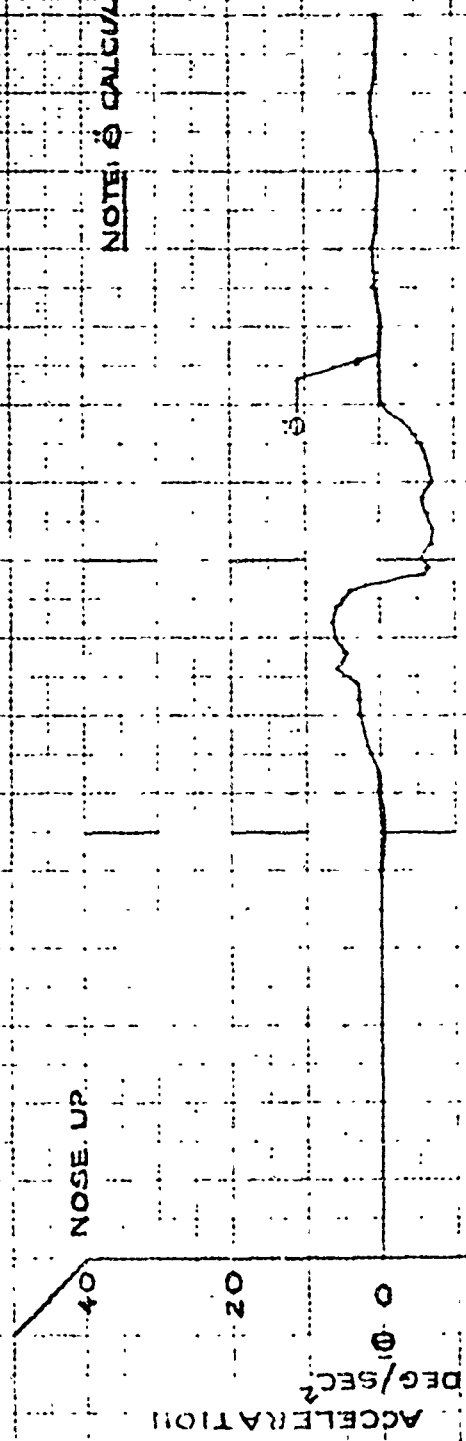
RUDDER & ELEVATOR POSITION

FIGURE D-23B

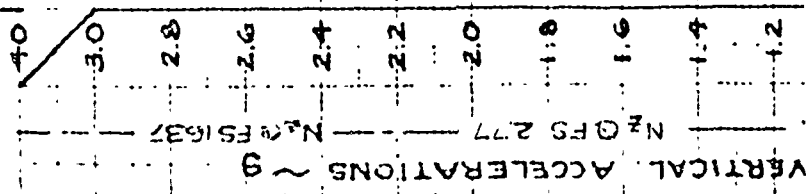
6008
ADS 152B

6008
ADS 152C

NOTE: ϕ CALCULATED FROM NA DATA



UP ACCEL.



N₂ FS 1637
N₂ FS 932 (C.G.)
N₂ FS 277

17.4 SUB CODE 4.2.1

PREPARED BY DTM
DATE 8-23-65
CHECKED BY JLD

LOCKHEED GEORVIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. FR 5473
MODEL C-141A
PAGE D-144

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AP 63-8077 LAC 6008
TEST DATE 8-23-65
FLIGHT 168 DROP NO. 22R

SHEET 3 OF 7

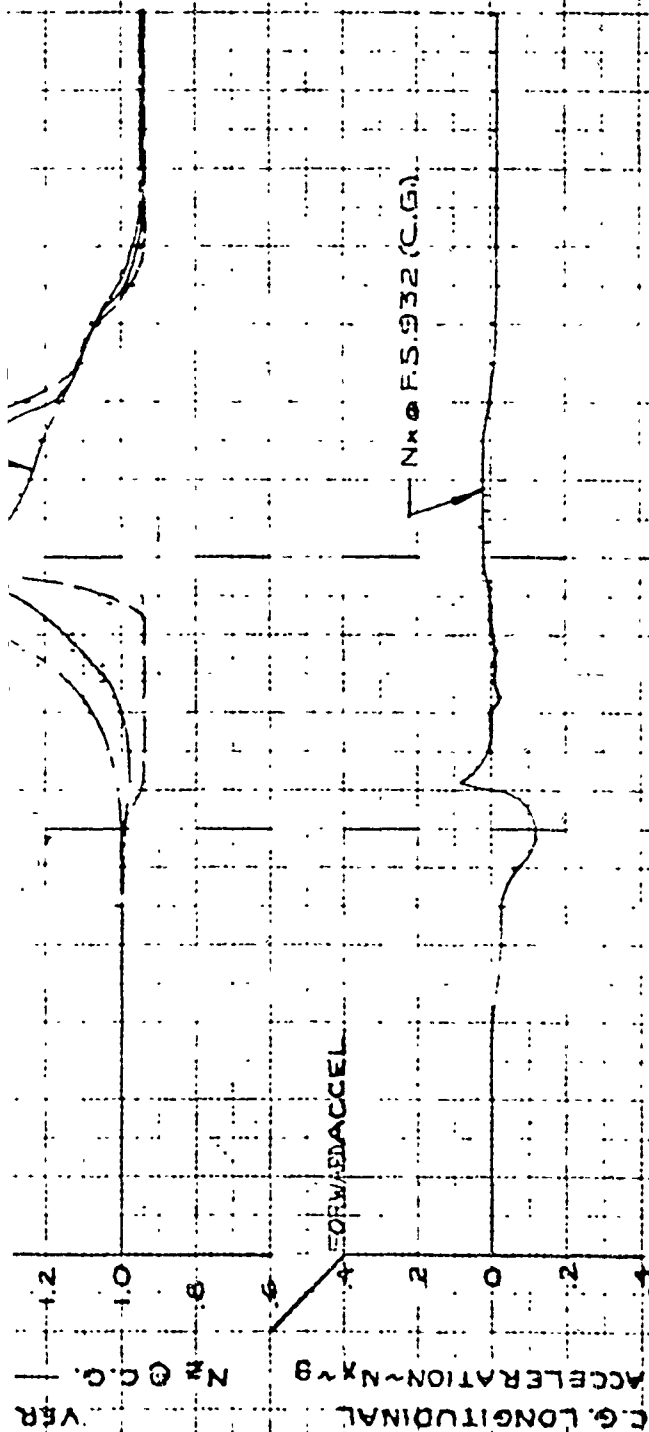
CARGO WT. = 35050 LBS.

NOTE:
SEE FIGURE D-23C SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-23C

6008
ADS 152C



6008
ADS 1520

12B 10.75 SUB CODE 4.2

RAMP LIP

LOAD C.G. POSITION

LOAD CLEAR OF RAMP

LOAD RELEASE

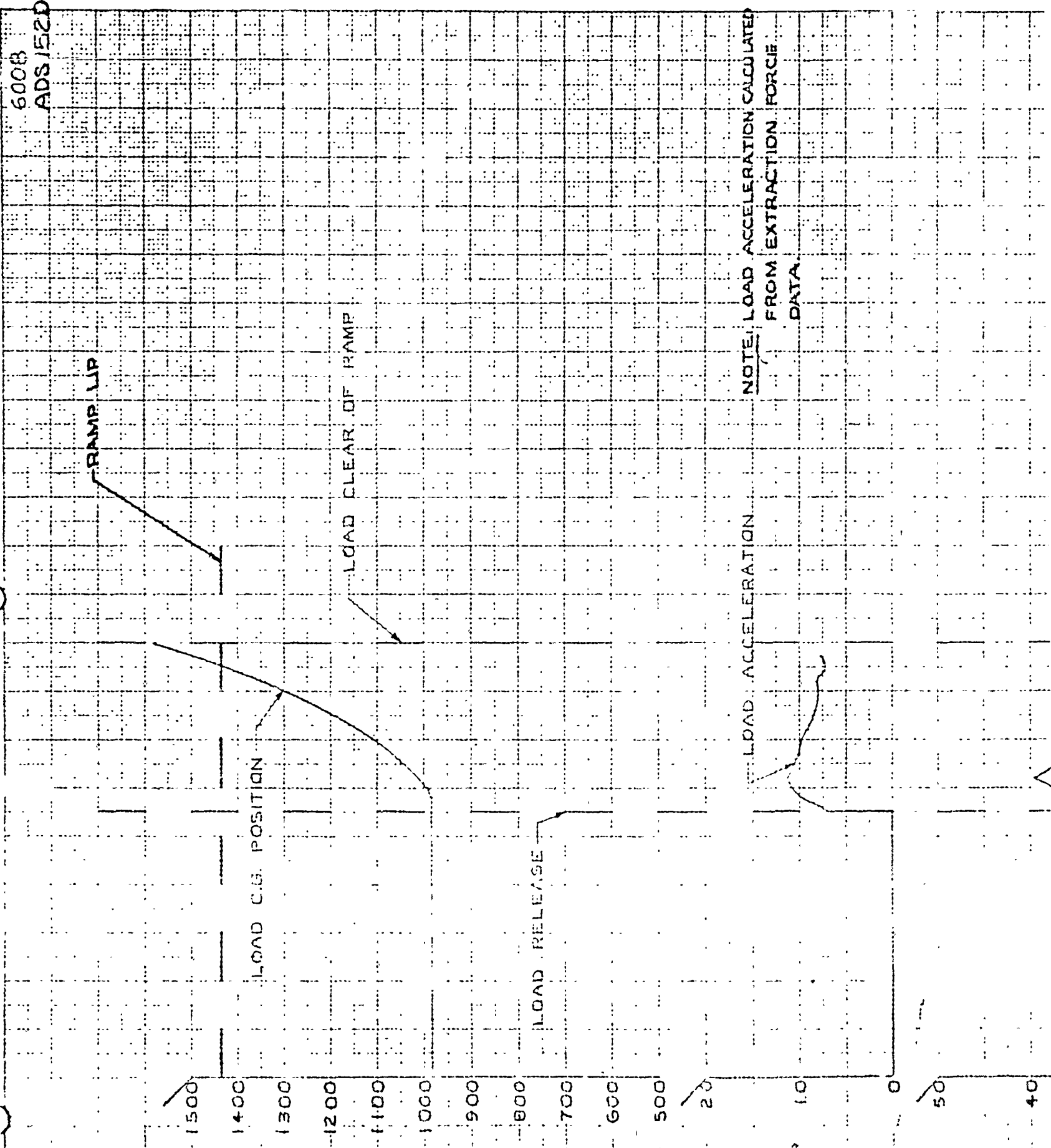
LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

10⁻³



PREPARED BY _____
DATE _____
CHECKED BY WUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO - ER 5473
MODEL - C-141A
PAGE - 3-145

145

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 8-23-65

FLIGHT 168

DROP NO. 22R

SHEET 4 OF 7

CARGO WT. 35,050 LBS.

NOTE:

SEE FIGURE D-23 AS SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTOR
CHUTE DESCRIPTION.

EXTRACTION FORCE

ELAPSED TIME - SEC

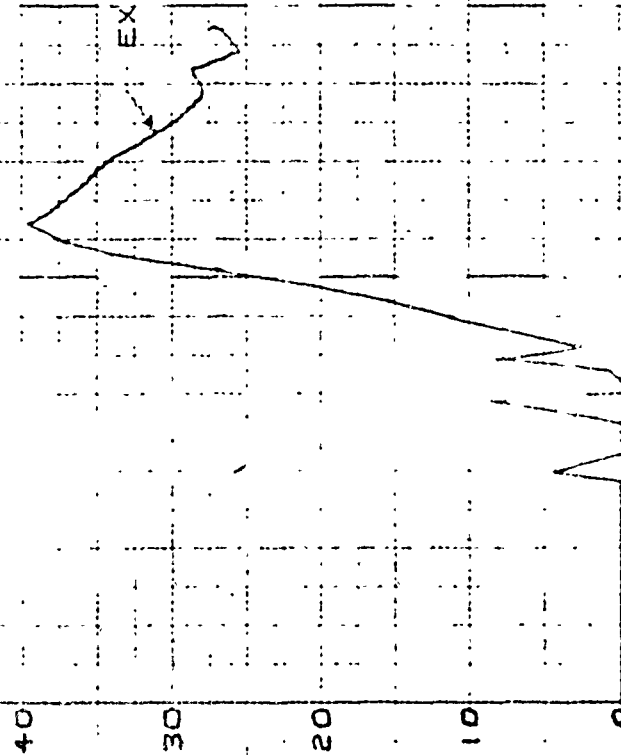


FIGURE D-23.D

6008

ADS152D

EXTRACTION FORCE - LBS X 10⁻³

6008
ADS-152E

JOB NO. 75 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD
L.H. ———
R.H. ———
LBS. X 10⁻³

TENSION

LH RAMP ACTUATOR
RH RAMP ACTUATOR

ADS LINK AXIAL LOAD
L.H. ———
R.H. ———
LBS. X 10⁻³

TENSION

LH SPIDER ARM
RH SPIDER ARM

VERTICAL LOAD
L.H. ———
R.H. ———
LBS. X 10⁻³

DOWN LOAD
R.H. VERTICAL LOAD
L.H. VERTICAL LOAD

PULL RIGHT

E LOADS
L.H. ———
R.H. ———
LBS. X 10⁻³

DATA FOR SIDE LOAD NOT AVAILABLE

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 8-21-65

FLIGHT 168

DROP NO. 22 R

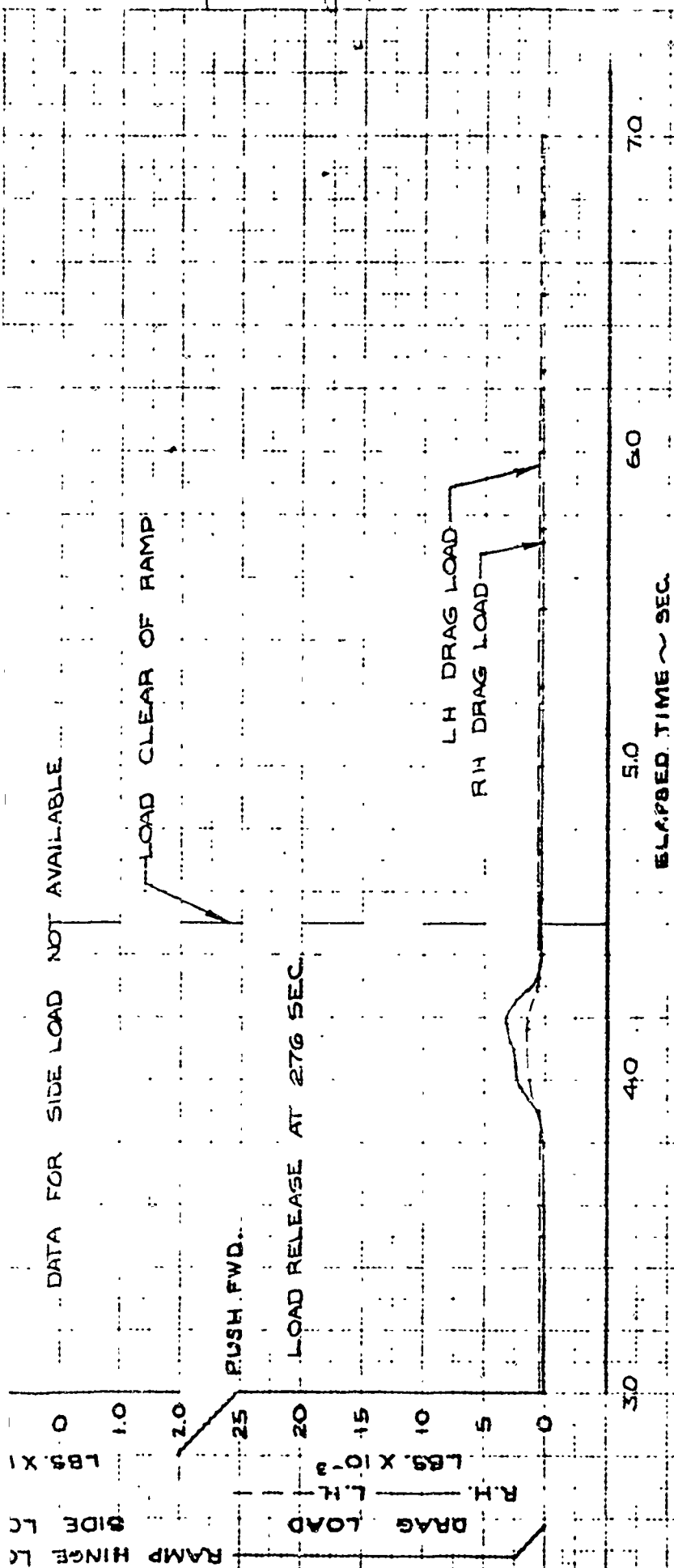
SHEET 5 OF 7

CARGO WT. 35.050 LBS

NOTE:
SEE FIGURE D23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-23E

6008
ADS-152E



6008
AD5152F

COMPRESSION

PETAL DOOR ACTUATOR ROD

JOB NO. 75 SUB. CODE 4.2.1

LOADS ~ LBS. X 10⁻³
RH
LH

RH PETAL DOOR ACTUATOR
LH PETAL DOOR ACTUATOR

RH NOT AVAILABLE

RH NOT AVAILABLE

LOAD CLEAR RAMP

DATA NOT AVAILABLE

DOWN LOAD

LOAD RELEASE AT 2.76 SEC

VERTICAL BEND NG ~ FS 1568

INCH-LBS. X 10⁻⁶

1048

DTM
8-23-65

JUP

ENGINEERING COMPANY
ADVISORY ENGINEERING SECTION

REPORT NO. ER 5473
V. OF. C-141A
PAGE D-147

TIME HISTORY OF AERIAL DELIVERY

MANEUVER

MODEL C-141A

AFG3-B077

LAC 6008

TEST DATE: 8-23-65

FLIGHT 168

DROP NO 22R

SHEET 6 OF 7

CARGO WT. 35,050 LBS.

NOTE:

SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

LOAD RELEASE AT 2.70 SEC

MY 8 FS 1048

DOWN LOAD

70

60

50

40

30

ELAPSED TIME ~ SEC.

FIGURE D-23F

6008
ADS 152F

VERTICAL BENDING ~ FS. 104
INCH-LBS. X 10⁻⁶

6008
AD9152G

UP LOAD

DATA NOT AVAILABLE

UP LOAD

DATA NOT AVAILABLE

LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

LOAD RELEASE AT 276 SEC

JOB NO. 75 SUB. CODE 4.2.1

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HSL 44L ~ 92
LBS X 10⁻³

BENDING @ HSL 44L ~ M'X
INCH - LBS X 10⁻⁶

NET LOADS
45 ~ M'X



DTM

0-24-65

JWP

ER 5473

C-141A

D-148

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 8-23-65

FLIGHT 165

DROP NO. 22R

SHEET 7 OF 7

CARGO WT. 35,050 LBS.

NOTE:

SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

70

60

50

40

30

FIGURE D-23G

6008

ADS 152G

M1 VSS 345

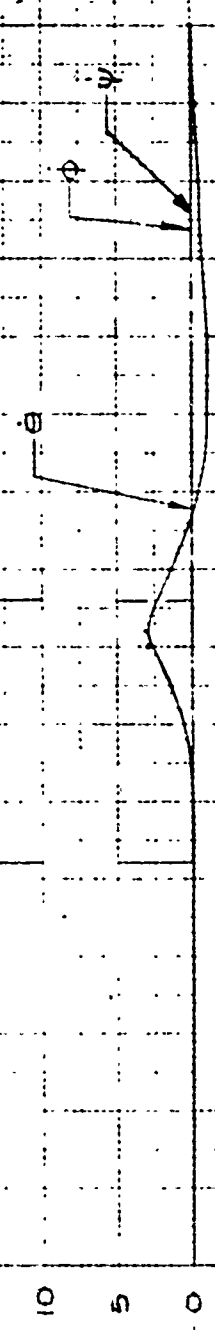
VERTICAL STABILIZER NET
BENDING @ VSS 345
~ INCH-LBS X 10⁻⁶
N A W N 0 -

6008
ADS 153A

25 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL
10
5
0
5
10
15
20
25

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

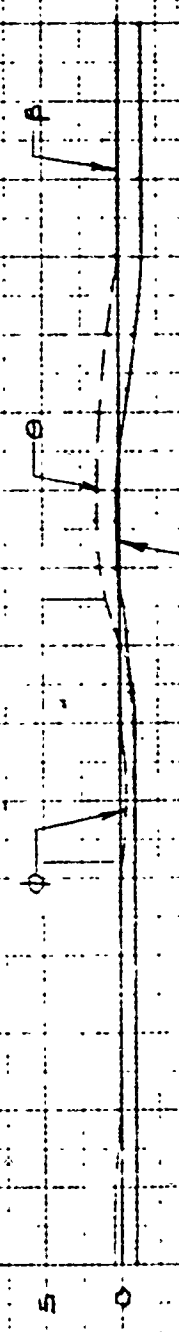
JOB NO. 76 SUB CODE 4.21.



20 NOSE UP
15 NOSE LEFT
10 RIGHT ROLL
5
0
5
10
15
20
25

AIRCRAFT ATTITUDES ~ DEG.

5400



LOAD RELEASE

LOAD CLEAR OF RAMP

PREPARED BY DTM
DATE 8-26-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

REPORT NO ER 5473
MODEL C-141A
PAGE D-149

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077

LAC 600B

TEST DATE 8-25-65

FLIGHT 170

DROP NO. 22R-2

SHEET 1 OF 7

CARGO WT 9700 LBS.

RUN CONDITIONS

1. G. W. 173,500 LBS.
2. C. G. PRIOR TO DROP ~ 32.7 % MAC
3. C. G. AFTER DROP ~ 30.4 % MAC
4. FLAPS 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 ~ E.P.R.
7. $\alpha_H \sim 0.1 \sim \text{DEG}$ ~ A/G N.U.

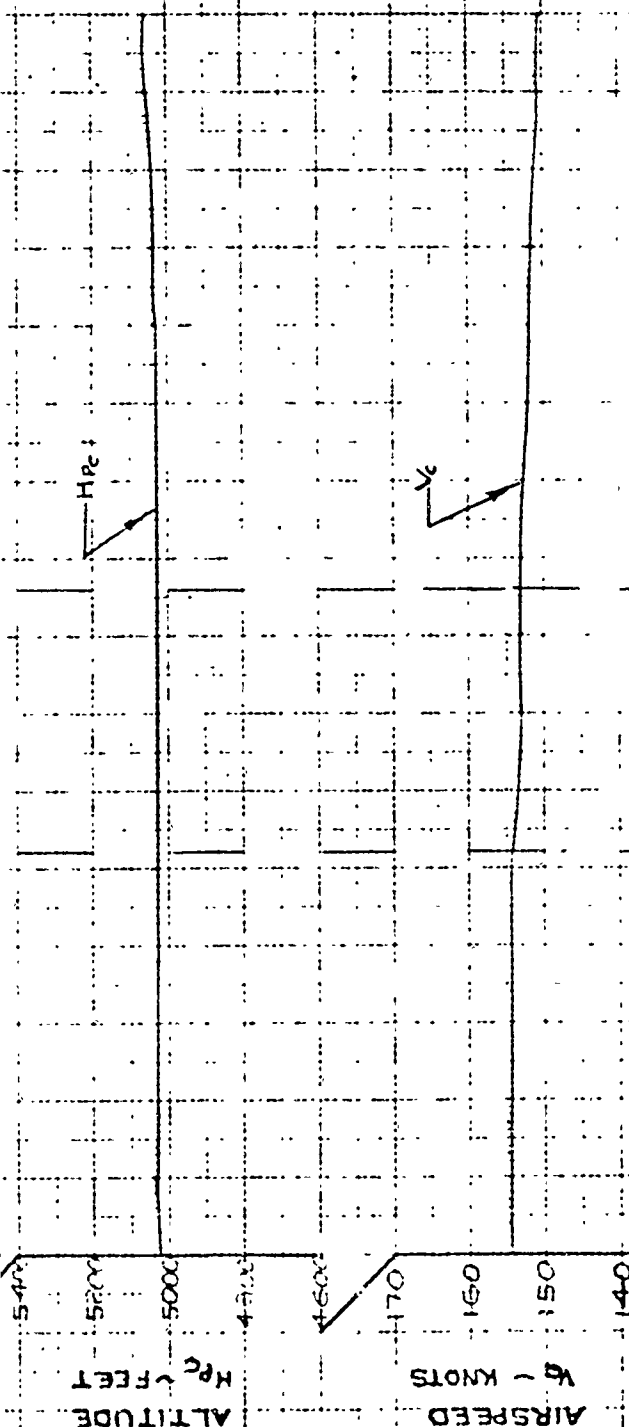
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 24 FT.
3. CARGO C.G. POSITIONS
LONG. ~ F.S. ~ 993
VERT. ~ WL ~ 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 22 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.21
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE 2-24A



600B

ADS 153A

REVISED 12-16-65
MMH

6008
ADS 153B

RIGHT ROLL
PUSH LEFT
FULL

Fa

Fr

Fe

T.E. UP

SeL

LOAD CLEAR OF RAMP

LOAD RELEASE

T.E. LEFT
T.E. UP

CONTROL LOG
Fe Fa

LEFT ALBERT R. HOFFMAN

154000Z APR 67

DTM
DATE 8-26-65
CHECKED BY JWP

ER 5473
C-141A
D-150

150

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63 6077

LAC 6008

TEST DATE 8-25-65

FLIGHT 170

DROP NO 22A-2

SHEET 2 OF 7

CARGO WT 19700 LBS

NOTE:

SEE FIGURE D-24A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

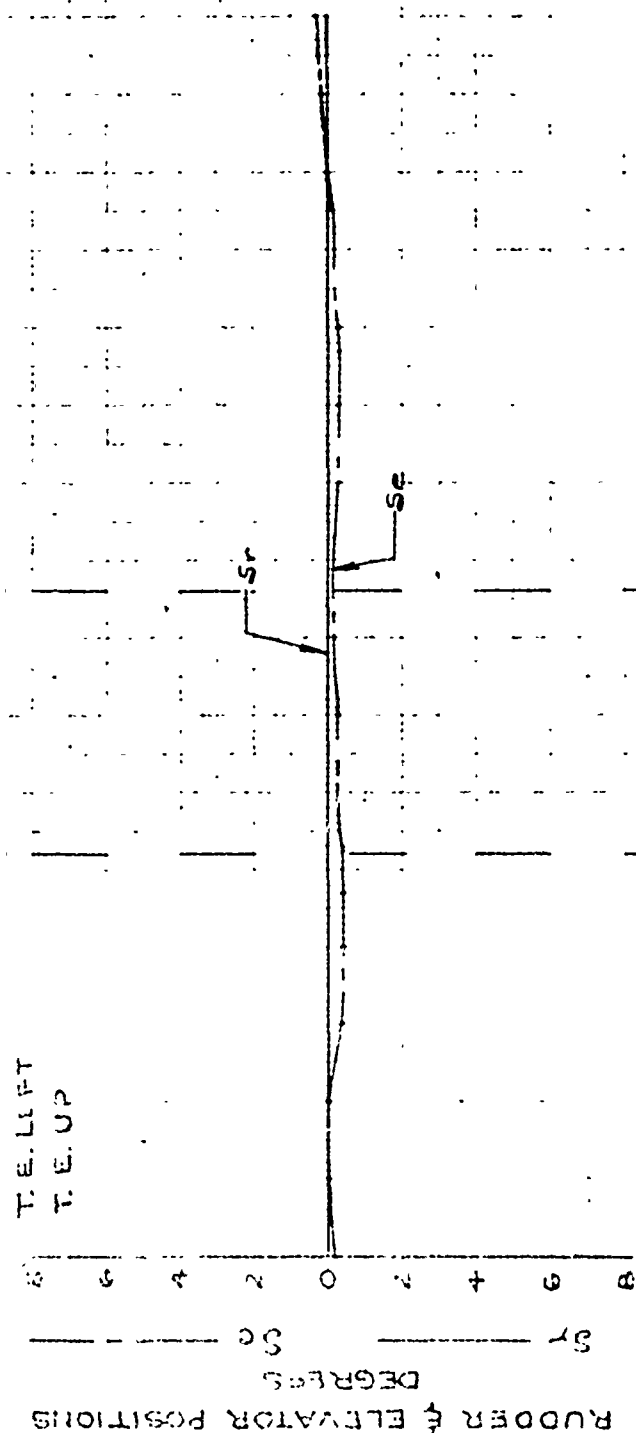


FIGURE D-24B

6008
AD3153B

6008
ADS1531C

NOTE: $\dot{\theta}$ CALCULATED FROM N_z DATA

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL.

LOAD RELEASE

LOAD CLEAR OF RAMP

N_z @ FS 1637

N_z @ FS.932 (C.G.)

N_z @ FS.277

VERTICAL ACCELERATIONS $\sim g$

N_z @ FS 277

N_z @ FS 1637

17.4 SUB CODE 4.2.1

82 ON 301

PREPARED JDC
DATE 8-25-65
CHECKED BY JWP

LONGITUDINAL ACCELERATION
AT THE TIME OF EXTRACTOR RELEASE

REMARKS ER 5473
MODEL C-141A
D-151

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AP 63-8077 LAC 6008
TEST DATE: 8-25-65
FLIGHT 170 DROP NO 228-2

SHEET 3 OF 7

CARGO WT. 19,700 LBS

NOTE:
SEE FIGURE D-24A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

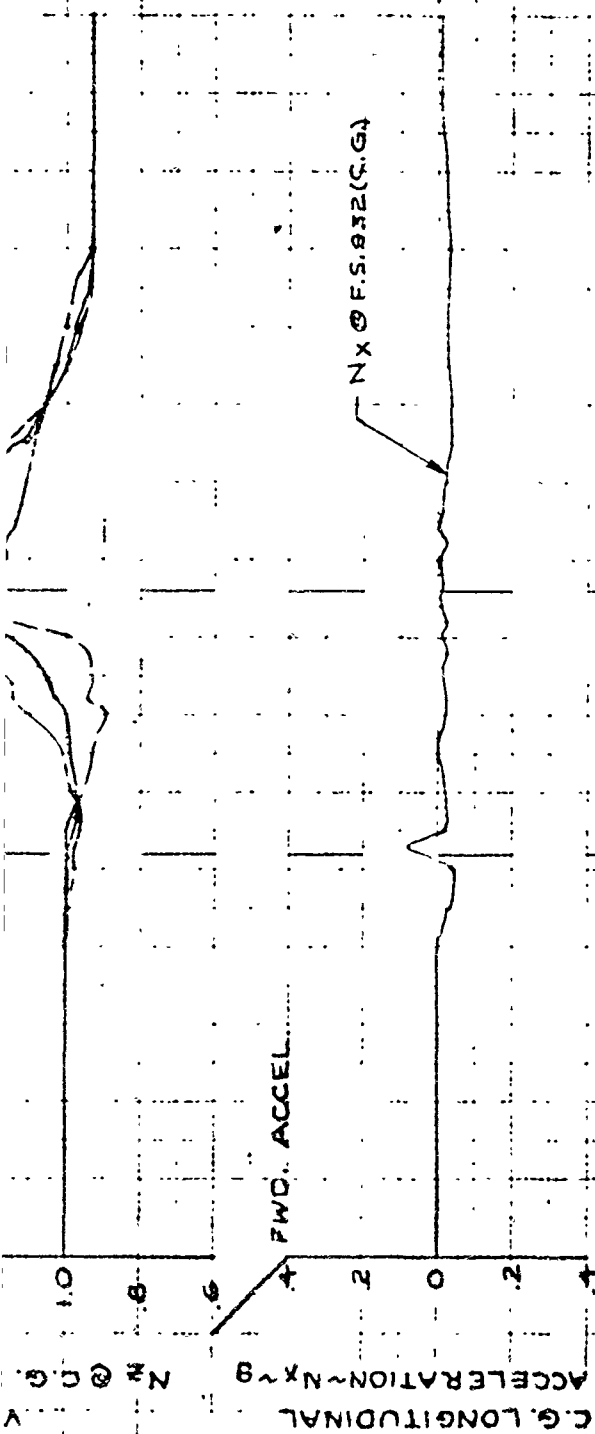


FIGURE D-24C

6008
ADS 153C

0008
ADS153D

JOB NO. TG: 5UR 20LE 4.21

LOAD C.G. POSITION ~ FUS. DIA.

LOAD ACCELERATION

g's

RAMP LIP

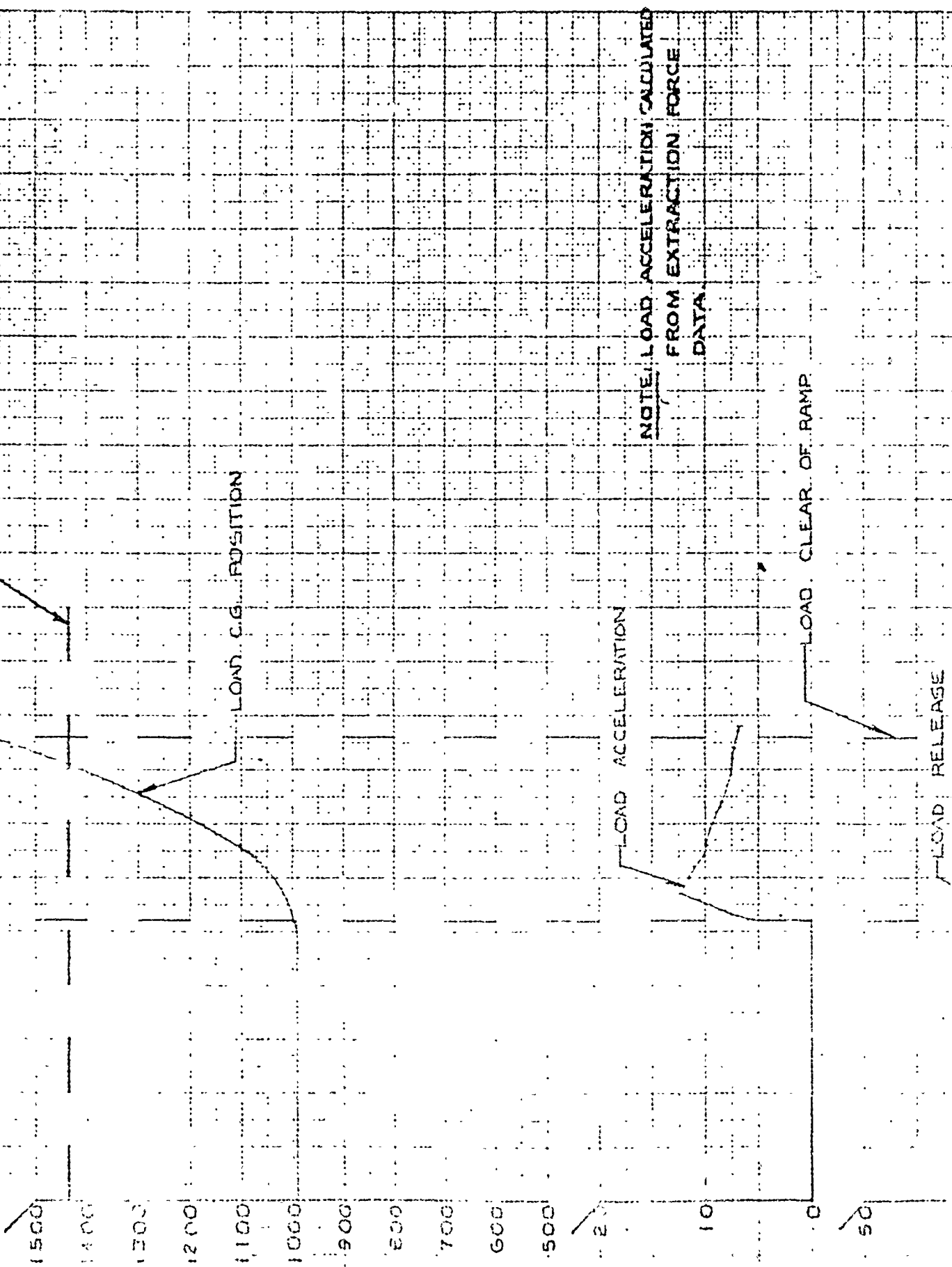
LOAD C.G. POSITION

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.

LOAD. CLEAR OF RAMP

LOAD RELEASE



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 8-25-65

FLIGHT 170

CROP NO. 22R-2

SHEET 4 OF 7

CARGO WT. 19,700 LBS.

NOTE:

SEE FIGURE D-24A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

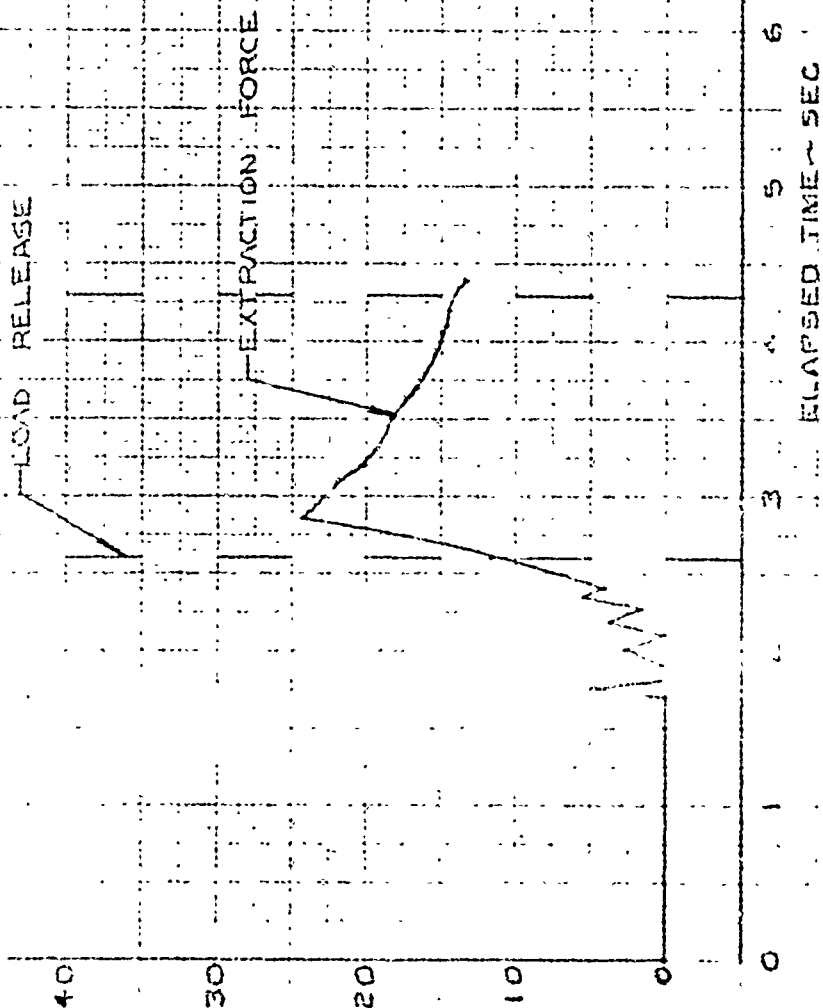
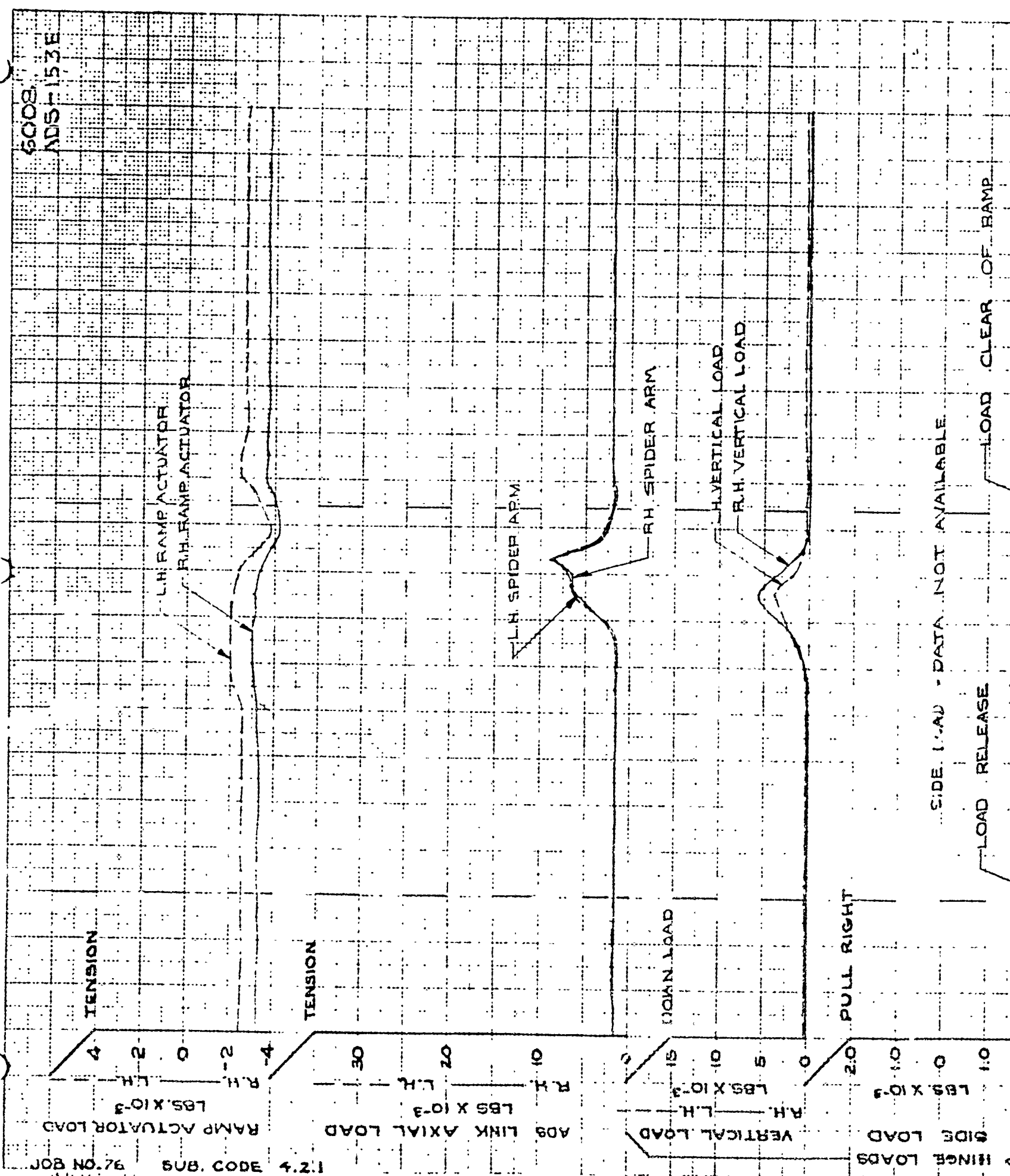


FIGURE D-24D

6008
ADS 153D

6008
AD5-153E



JOB NO. 76 SUB. CODE 4.2.1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL G-141A
 AF 63-8577 LAC 6008
 TEST DATE: 8-25-65
 FLIGHT 170 DROP NO. 22-R2

SHEET 5 OF 7

CARGO WT. 19,700 LBS

NOTE:
 SEE FIGURE D-24A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

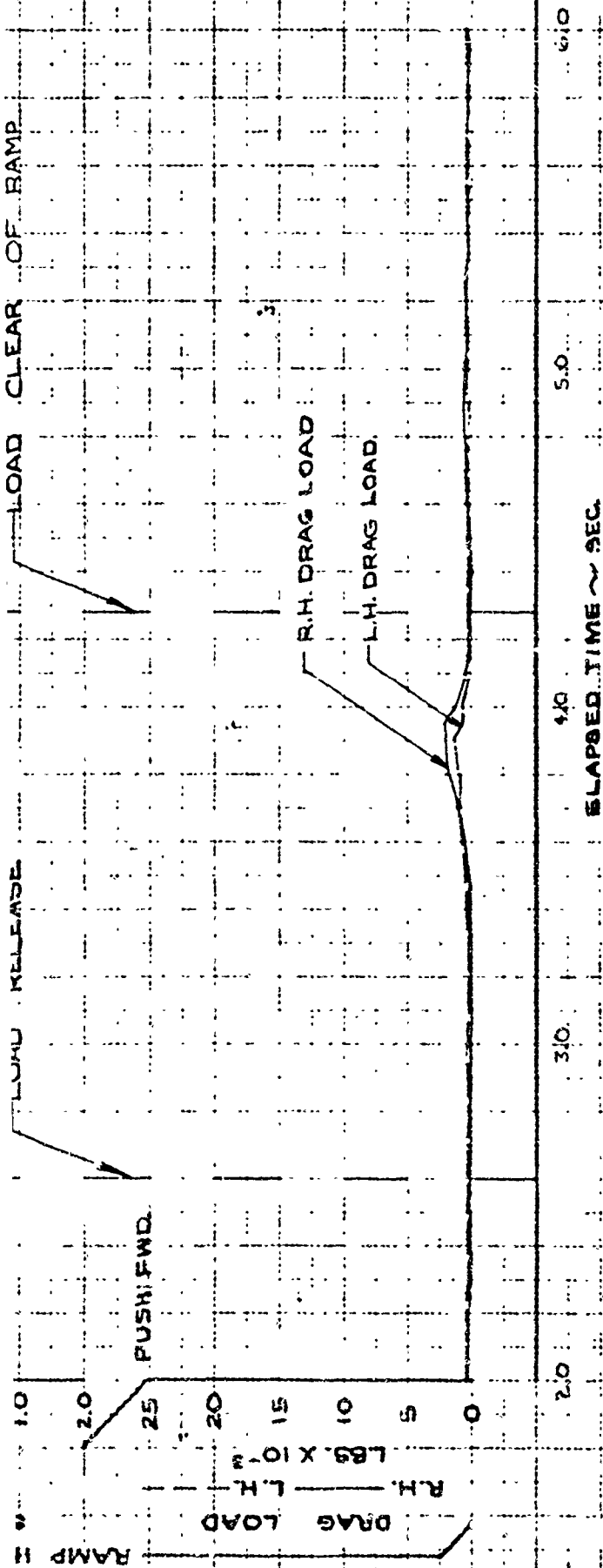


FIGURE D-24E

6008
 ADS-153E

GOOB
ADS 153F

COMPRESSION

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10³
RH
LH

JOB. NO. 76 SUB. CODE 4.2.1

LH. PETAL DOOR ACTUATOR

RH. PETAL DOOR ACTUATOR

VERTICAL BENDING ~ FS 156B
INCH-LBS. X 10⁻⁶

My CFS 156B

LOAD CLEAR OF RAMP

DOWN LOAD

LOAD RELEASE

FS 104B

JDG
8-25-65
JUP

ENGINEERING DATA COMPANY
1000 15th Street, N.W.
Washington, D.C. 20004

REPORT NO. ER 5473
MODEL C-141A
PAGE D-154

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 8-25-65
FLIGHT 170 DROP NO 22R-2

SHEET 6 OF 7

CARGO WT. 19,700 LBS.

NOTE:
SEE FIGURE D-24A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

VERTICAL BENDING ~ FS
INCH-LBS. X 10⁻⁶
DOWN LOAD

ELAPSED TIME ~ SEC.
6.0
5.0
4.0
3.0
2.0

FIGURE D-24F

6008
ADS 153F

1.2.4 3003 SUB. CODE 4.2.1

HORIZONTAL STABILIZER NET LOADS

SHEAR @ HBL 44L ~ $\frac{1}{2}$ "

LBS X 10^{-3}

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

LOAD RELEASE

LOAD CLEAR OF RAMP

S₁ @ HBL 44L

M₁ @ HBL 44L

6008
ADS 536

DTM
8-25-65
JUP

ER 5473 -
C-141A
D-155

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 8-25-65

FLIGHT 170

DROP NO. 22R-2

SHEET 7 OF 7

CARGO WT. 19700 LBS

NOTE:

SEE FIGURE D-24 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

60

50

40

30

20

ELAPSED TIME ~ SEC.

M: @ VSS 345

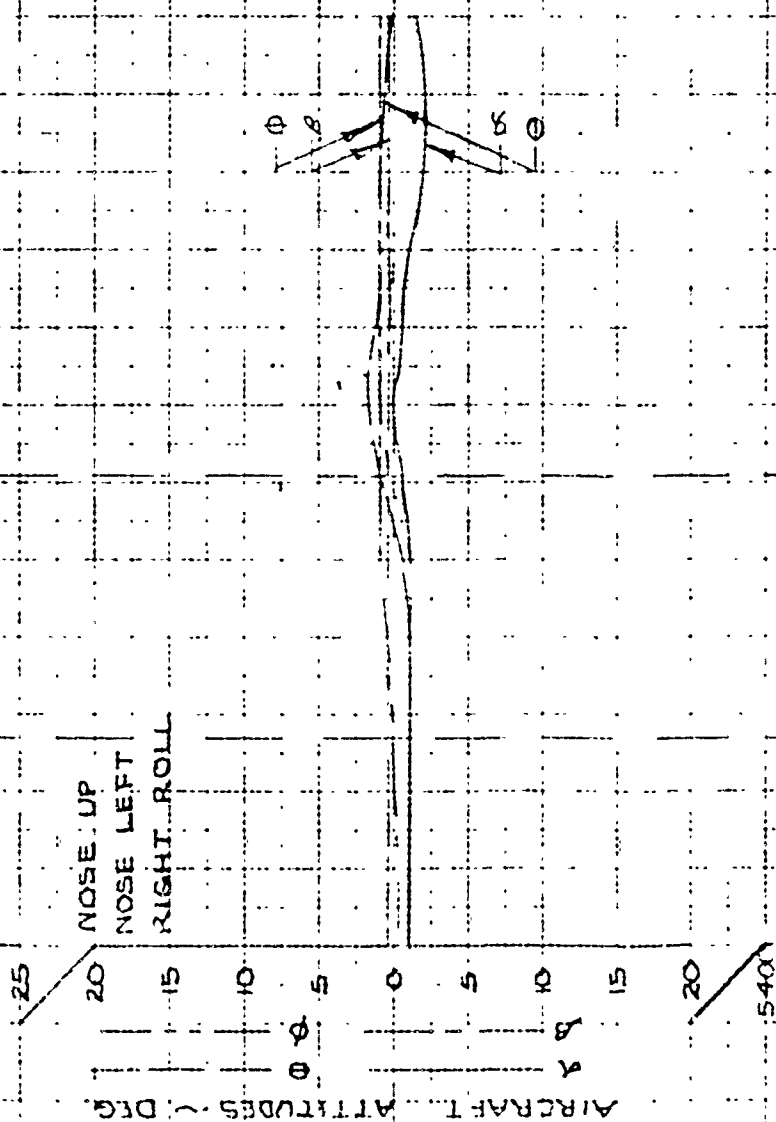
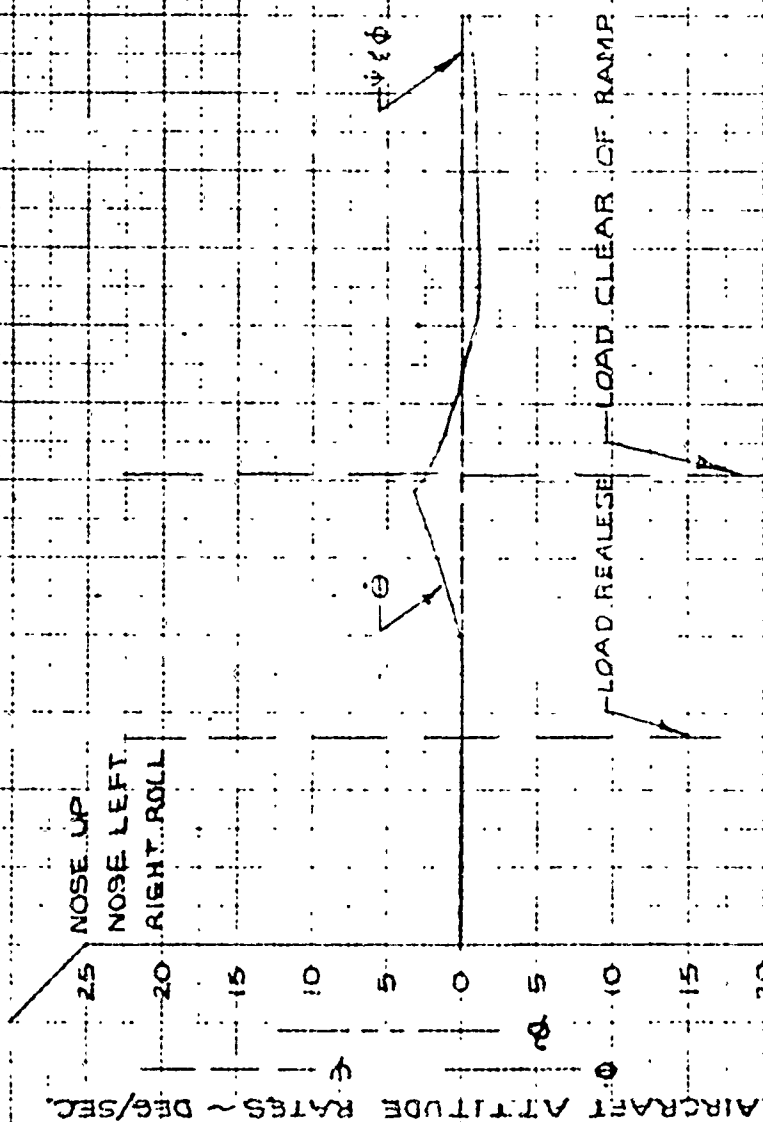
FIGURE D-24G

6008
ADS 153G

VERTICAL STABILIZER NET L
BENDING @ VSS 345 ~ N
~ INCH-LBS X 10⁻⁶
5 4 3 2 1 0

6008

ADSH 54A



JOB NO. 78 SUB. CODE 1.21

AIRCRAFT ATTITUDES - DEG

AIRCRAFT ATTITUDE RATES - DEG/SEC

FORWARDED BY MBH
DATE 8-28-65
CHECKED BY JUP

REF ID NO FR 5473
MODEL C-141A
PAGE D-156

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC 6008
TEST DATE 8-27-65
FLIGHT 172 DROP NO. 22R-1

SHEET 1 OF 2

CARGO WT 19,900

RUN CONDITIONS

1. G.W. ~ 179,300 LBS.
2. C.G. PRIOR TO DROP ~ 32.9% MAC
3. C.G. AFTER DROP ~ 30.8% MAC
4. FLAPS ~ 24.4 DEG.
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 ~ EPR
7. α_H ~ 0.1 DEG. ~ N.U.

CARGO DESCRIPTION

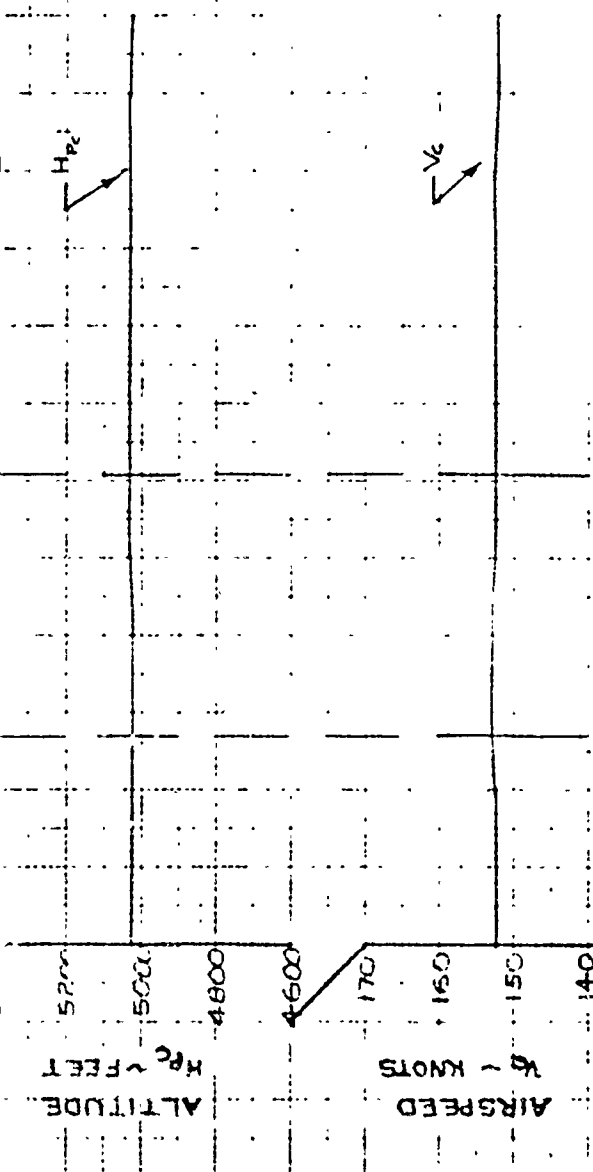
1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 238 IN.
3. CARGO C.G. POSITIONS
LONG. ~ PS ~ 993
VERT. ~ WL ~ 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 25 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.2
4. EXTRACTION LINE LENGTH ~ 100 FT.

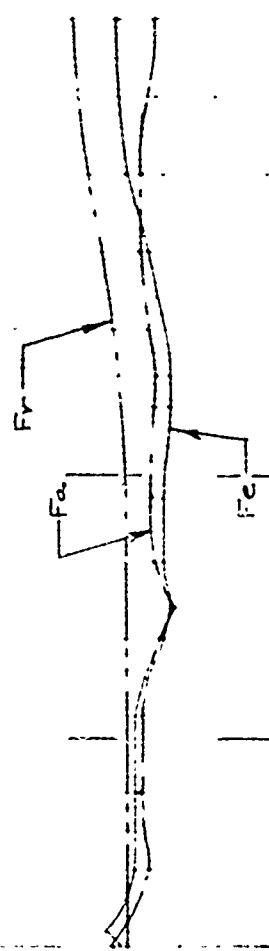
FIGURE C-25A

6008
ADS-154A
REVISED 12-16-65
MBH



6008
AOS-154B

RIGHT ROLL
PUSH LEFT
PULL



F E. UP

δ_{aL}

LOAD CLEAR OF RAMP

LOAD RELEASE

T. E. UP

CONTROL FOR 3000

LEFT ACTION POSITION 3000

IONS

DTM

DATE 8-28-65

ER 5473

C-141A

D-157

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 8-27-65

FLIGHT 172

DRUP NO 22R-3

SHEET 2 OF 7

CARGO WT 19,900 LBS.

NOTE:

SEE FIGURE D-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC.

DATA FOR S_e NOT AVAILABLE

S_e

FIG D-25B

6008
ALD-154-B

6008
ADS-154C

NOTE: $\dot{\theta}$ CALCULATED FROM IN DATA

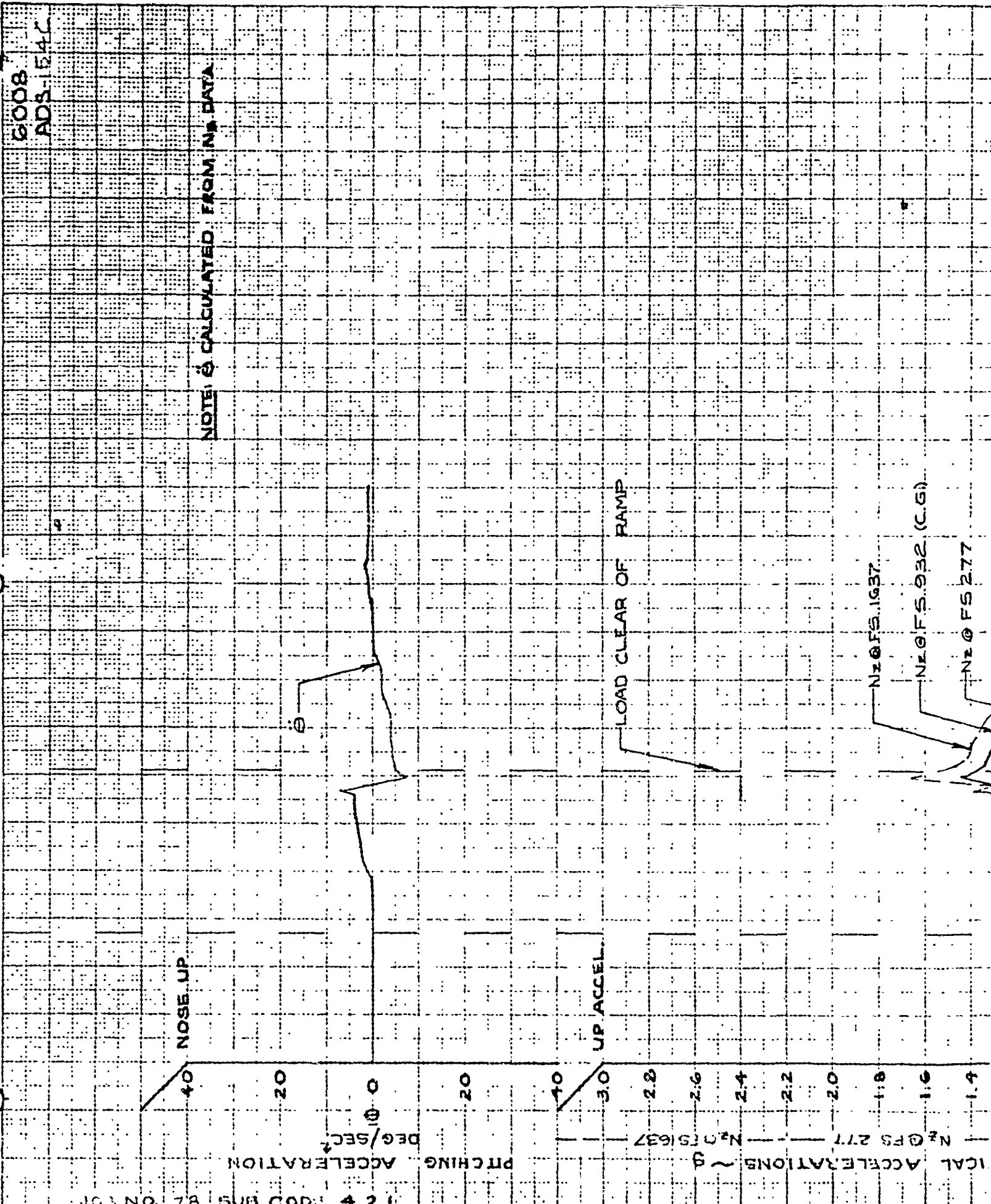
NOSE UP

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL

LOAD CLEAR OF RAMP

NZ @ FS 1637
NZ @ FS 277 (C.G.)
NZ @ FS 277



PREPARED BY DTM
DATE 8-27-65
CHECKED BY JUP

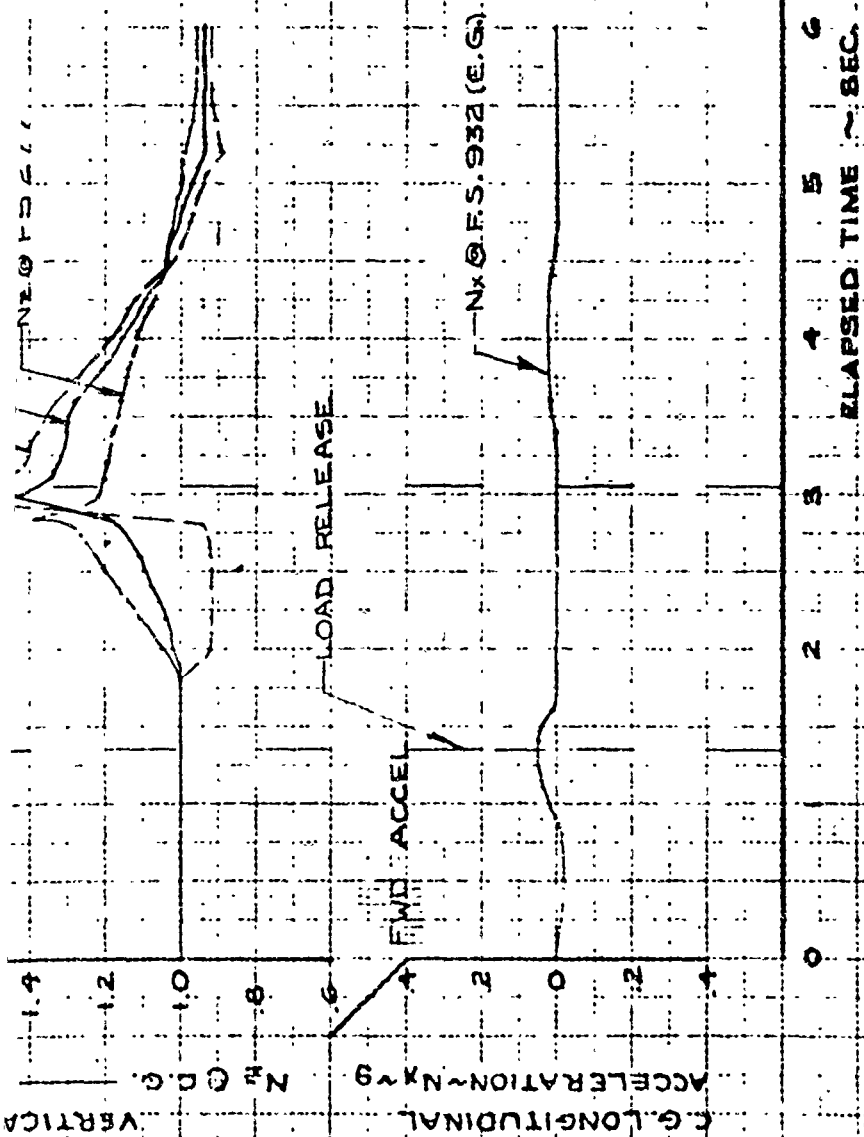
LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NUMBER 5473
MODEL C-141A
PAGE D-158

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-8077 LAC 6008
TEST DATE: 8-27-65
FLIGHT 172 DROP NO 228-3
SHEET 3 OF 7
CARGO WT. 9900 LBS

NOTE:
SEE FIGURE D-25C SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.



6008
ADS154D

JOB NO 78 SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

g's

50 (11 MILION)

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

LOAD CLEAR OF RAMP

LOAD RELEASE

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

PREPARED BY DIM

DATE 8-28-65

CHECKED BY

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. 5472

MODEL C-141A

PAGE 7-159

159

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 8-27-65

FLIGHT 172

DROP NO. 22R-3

SHEET 4 OF 7

CARGO WT. 19,900 LBS

NOTE:

SEE FIGURE D-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

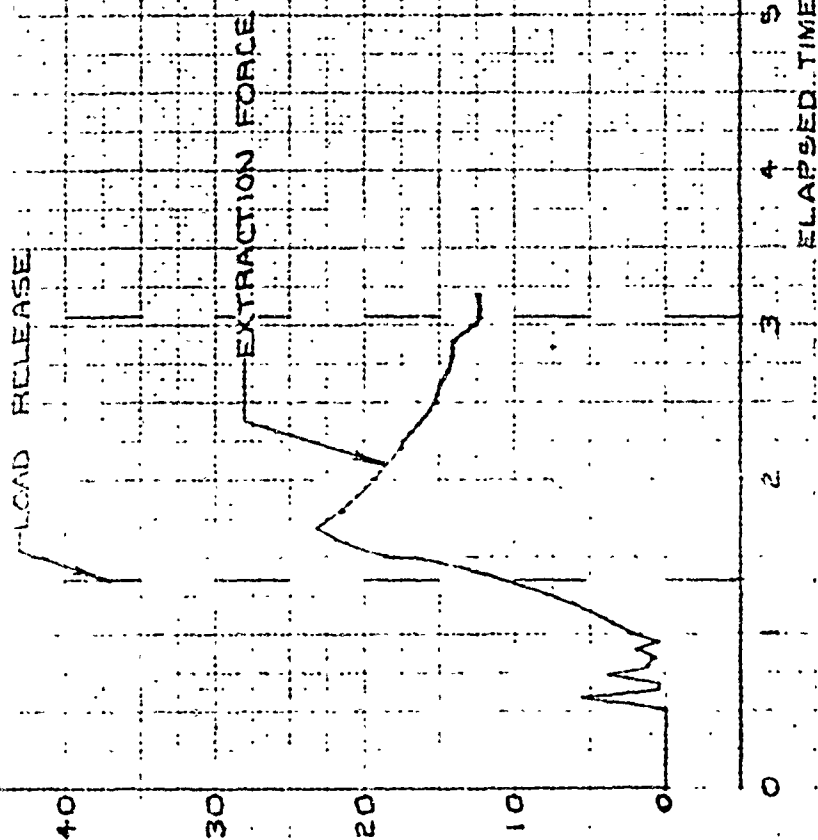


FIGURE D-25D

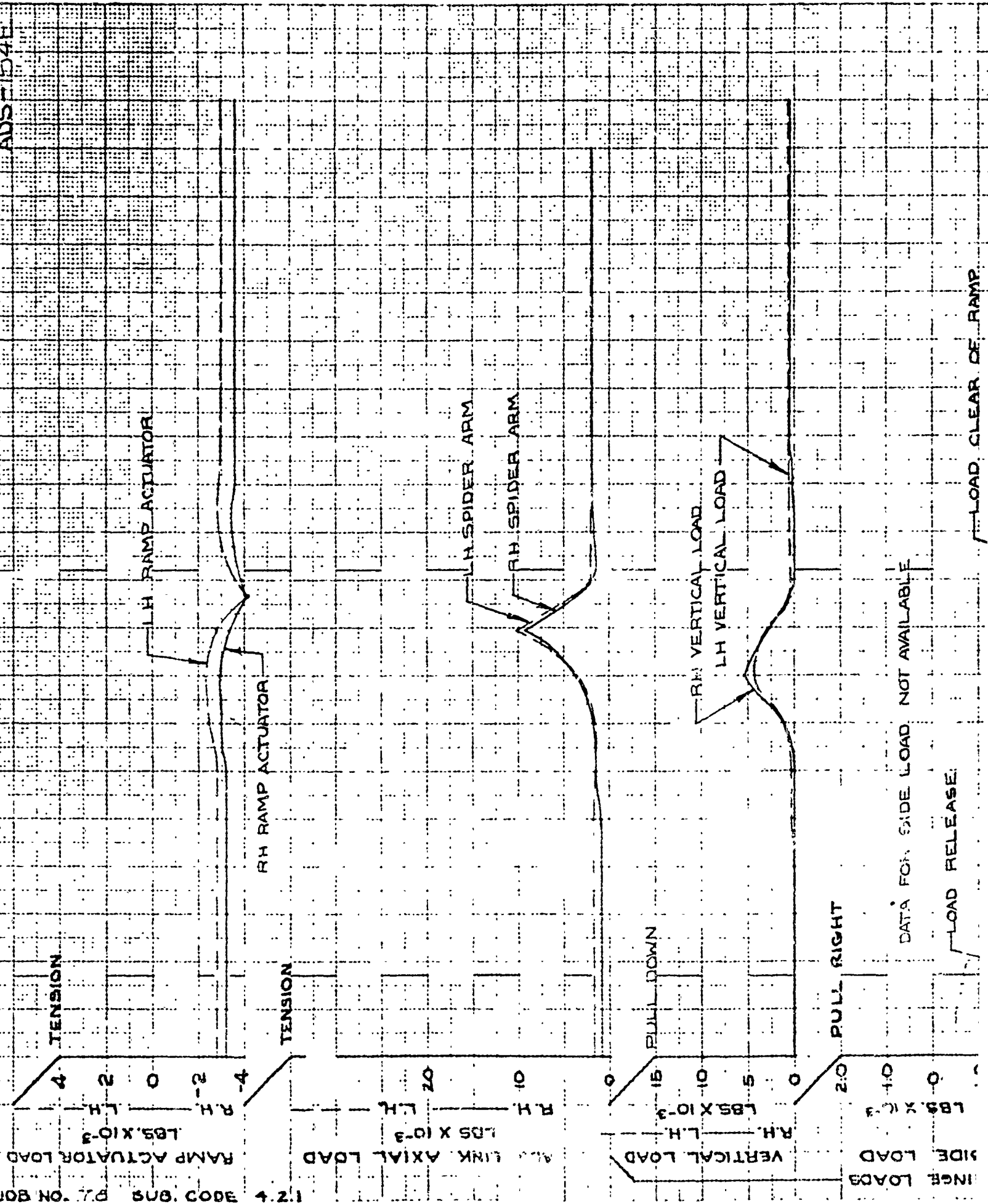
EXTRACTION FORCE - LBS x 10³

6008

ADS 154D

6008
ADS-154E

JOB NO. 7.8 SUB. CODE 4.2.1



DATA FOR SIDE LOAD NOT AVAILABLE

FORMAL DTM
DATE 8-28-65
CHECKED BY

ER 5473
MODEL C-141A
PAGE D-160

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE: 8-27-65
FLIGHT 12 DROP NO 22R-3
SHEET 3 OF 7
CARGO WT. 19900 LBS.

NOTE:
SEE FIGURE D-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

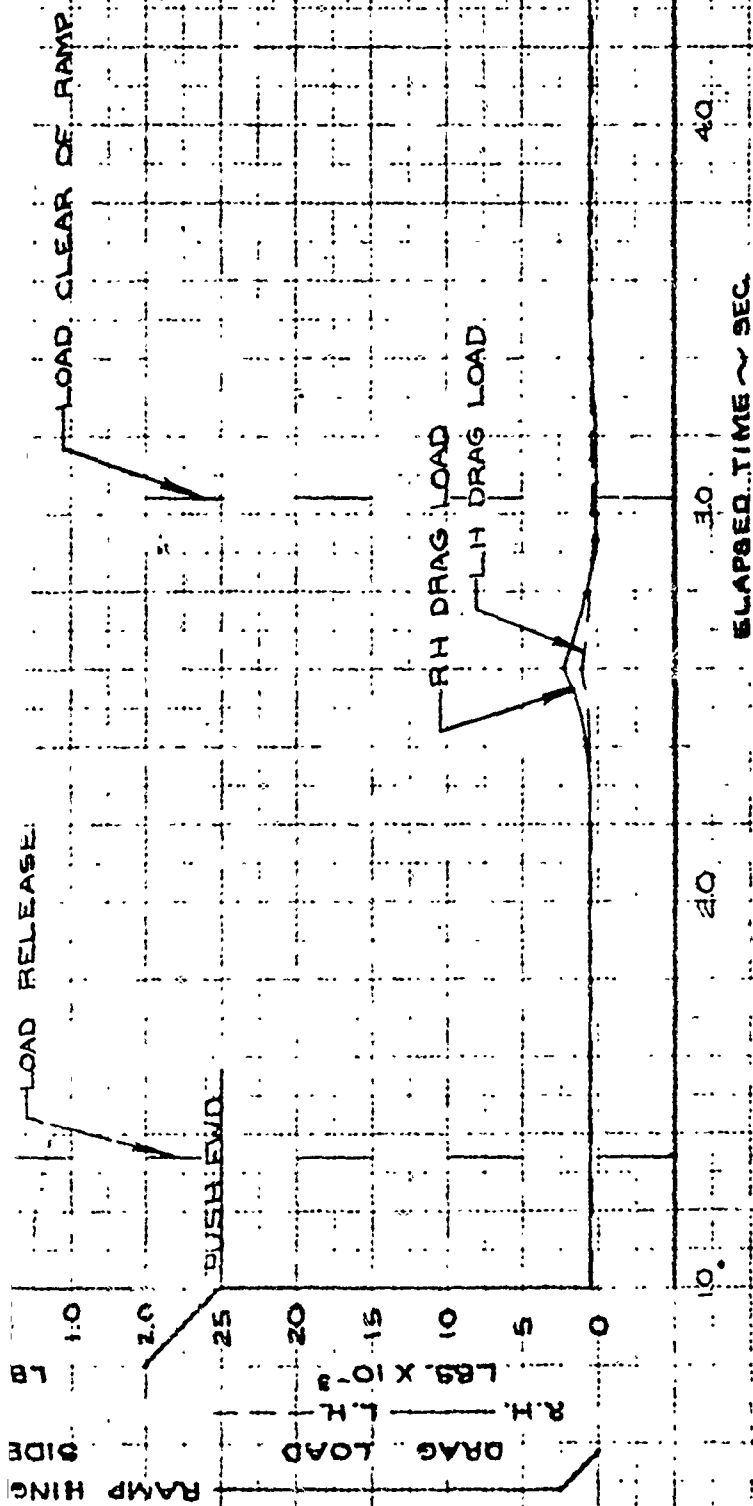


FIGURE D-25E

6008
ADS-154E

6008
ADS-154F



PREPARED BY DTM
DATE 3-28-68
CHECKED BY

LOCKHEED GEORGIA COMPANY
AERIAL DELIVERY SYSTEMS DIVISION

REPORT NO ER 5473
MODEL C-141A
PAGE D-161

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-8071 LAC 6008
TEST DATE 3-27-68
FLIGHT 172 DROP NO 22R3

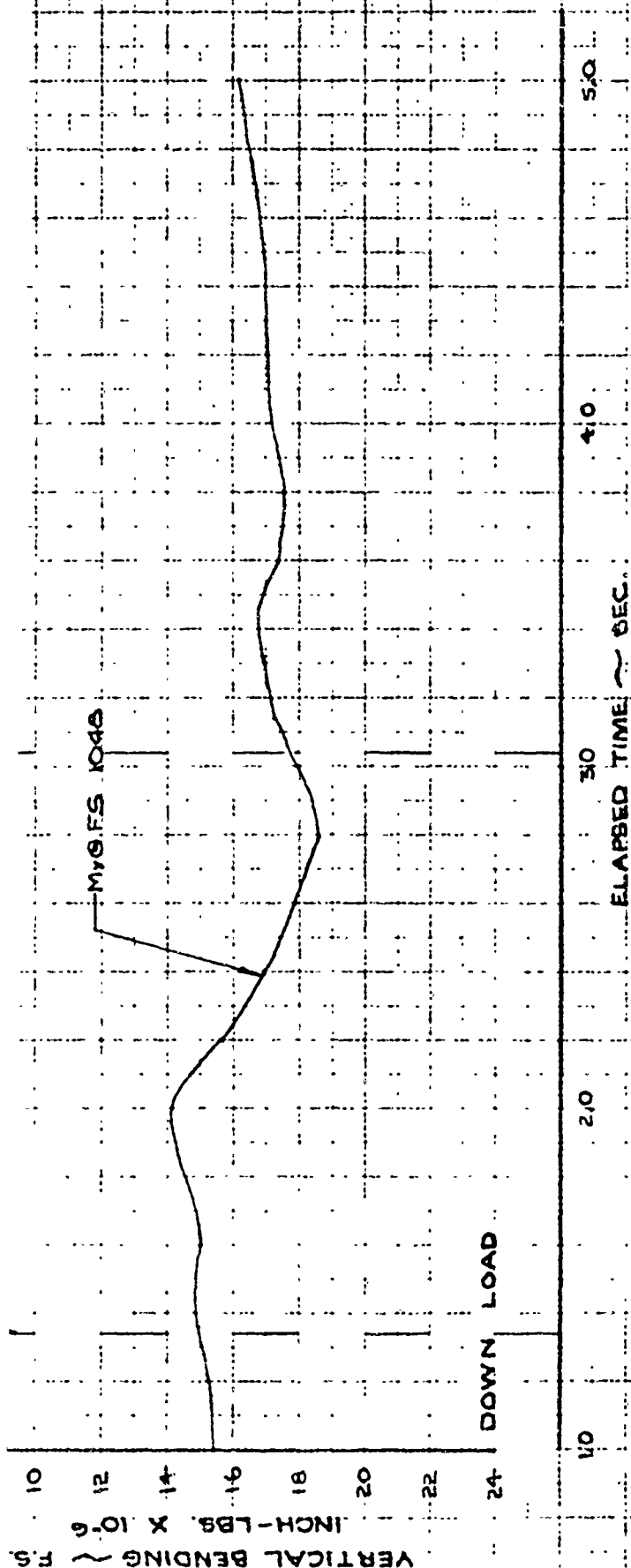
SHEET 6 OF 7

CARGO WT. 19,900 LBS.

NOTE:
SEE FIGURED-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-25F

6008
ADS-154F



6008
ADS 154G

UP LOAD

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ 10^{-3} LBS X 10^{-3}

5/2 @ HBL 44L

UP LOAD

BENDING @ HBL 44L ~ $M'X$
INCH - LBS X 10^{-6}

M10 HBL 44L

LOAD LEFT @ VS TIP

LOAD RELEASE

LOAD CLEAR OF RAMP

M10 VSS 345

JET LOADS
FT ~ $M'X$

JOB NO. 78 SUB. CODE 4.2.1

DTM
8-28-65

ER 5473 -

C-141A

D-162

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF68-8077

LAC 6008

TEST DATE: 8-27-65

FLIGHT 172

DROP NO. 22R-3

SHEET 1 OF 1

CARGO WT. 19,900 LBS.

NOTE:

SEE FIGURE D-25G SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

50

40

30

20

10

ELAPSED TIME ~ SEC.

Mt @ VSS 345

FIGURE D-25G

6008

ADS 154G

VERTICAL STABILIZER NET
BENDING @ VSS 345 ~
~ INCH-LBS X 10⁻⁶
5 4 3 2 1 0

6008
AD8155A

25 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL
10
5
0

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

JOB NO. 80 SUB. CODE 4.21

NOTE: $\dot{\theta}$ CALCULATED FROM $\dot{\theta}$

$\dot{\theta}$
 $\dot{\phi}$
 $\dot{\psi}$

LOAD CLEAR OF RAMP

LOAD RELEASE

20 NOSE UP
15 NOSE LEFT
10 RIGHT ROLL
5
0

AIRCRAFT ATTITUDES ~ DEG.

θ
 ϕ
 α

PREPARED BY JWP & MBH
DATE 9-1-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER-5473
MODEL C-141A
PAGE D-163

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC 6008
TEST DATE 8-31-65
FLIGHT 173 DROP NO. 22 R-4

SHEET 1 OF 7

CARGO WT 19,650 LBS.

RUN CONDITIONS

1. G.W. ~ 179,400 LBS.
2. C.G. PRIOR TO DROP ~ 32.7% MAC
3. C.G. AFTER DROP ~ 30.5% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.21 EPR
7. α_H ~ 0.15° (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 ~ 993
VERT. ~ WL ~ 160

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 2
3. RATED CHUTE FORCE/CARGO WT. ~ 1.2
4. EXTRACTION LINE LENGTH ~ 150 FT

FIGURE D-26A

ALTITUDE
HPc - FEET

AIR SPEED
Vc - KNOTS

ELAPSED TIME - SEC

6008

REVISED 12-17-65
MBH

6008 ADS155B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40
F_y F_a F_e

CONTROL FORCES ~ LBS.

JOB NO. 80 SUB. CODE 4 21

LEFT AILERON POSITION ~ DEG.

T.E. UP

20 15 10 5 0 5 10 15

LOAD
RELEASE

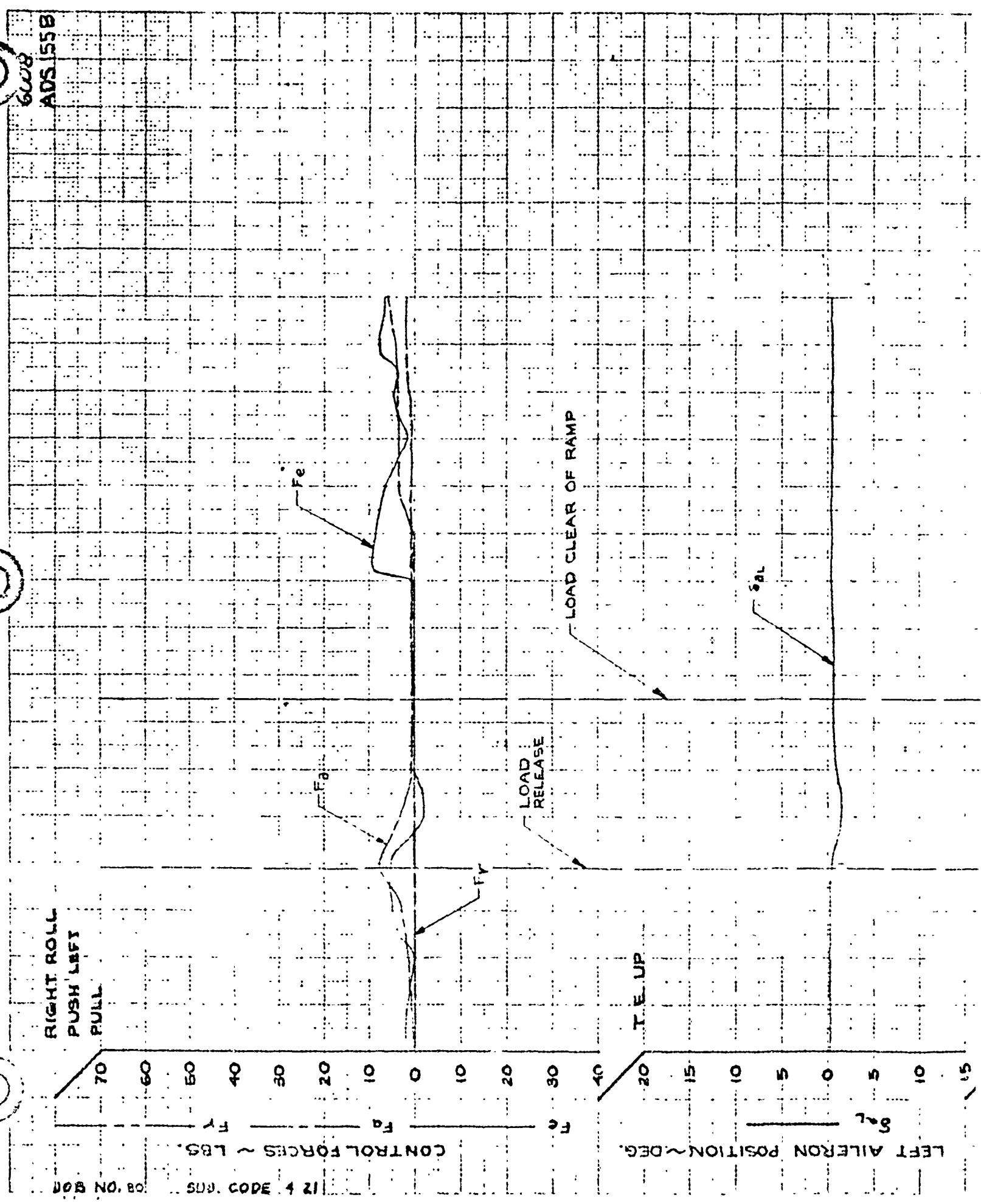
LOAD CLEAR OF RAMP

F_e

F_a

F_y

δ_{al}



FORMER: JDC

DATE 9-1-68

TIME: 10:00

ER 5473

C-141A

D-154

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAG 6008

TEST DATE: 9-31-65

FLIGHT 173

DROP NO 22R-4

SHEET 2 OF 7

CARGO WT 19650 LB.

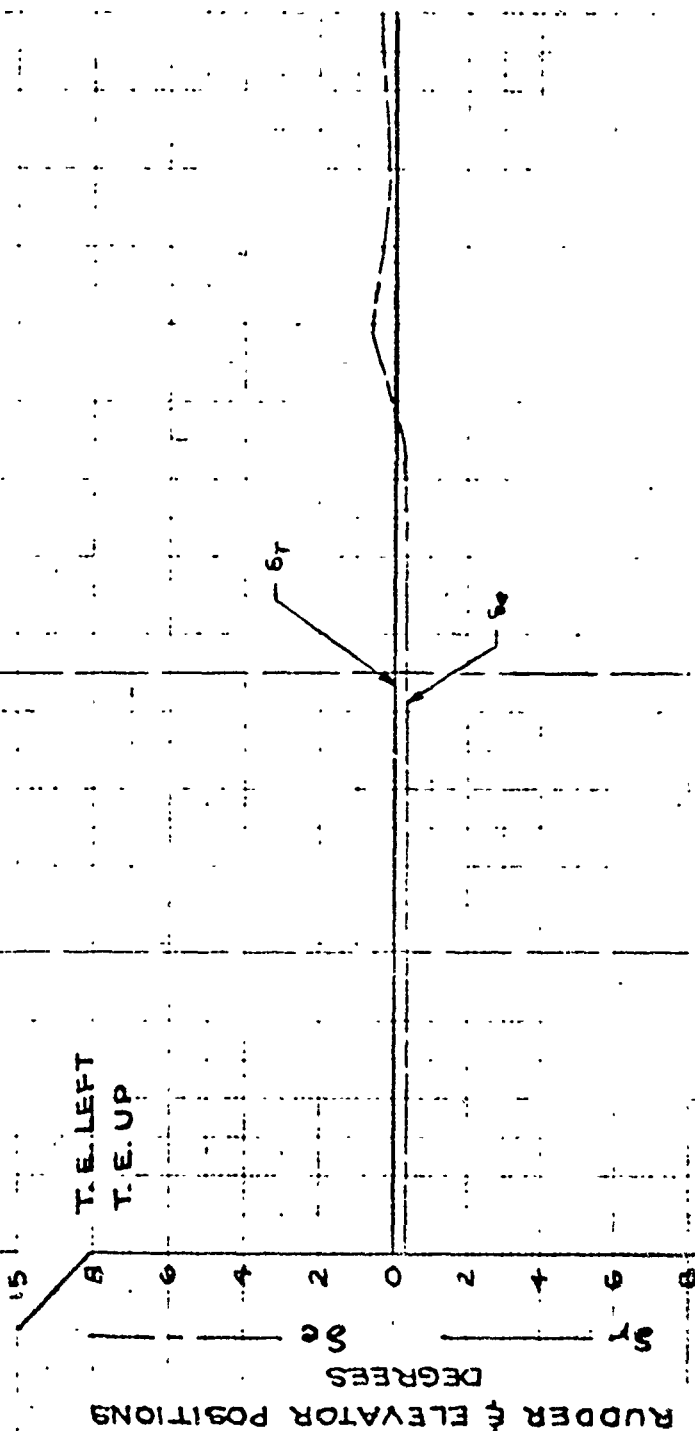
NOTE:

SEE FIGURE D-26A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

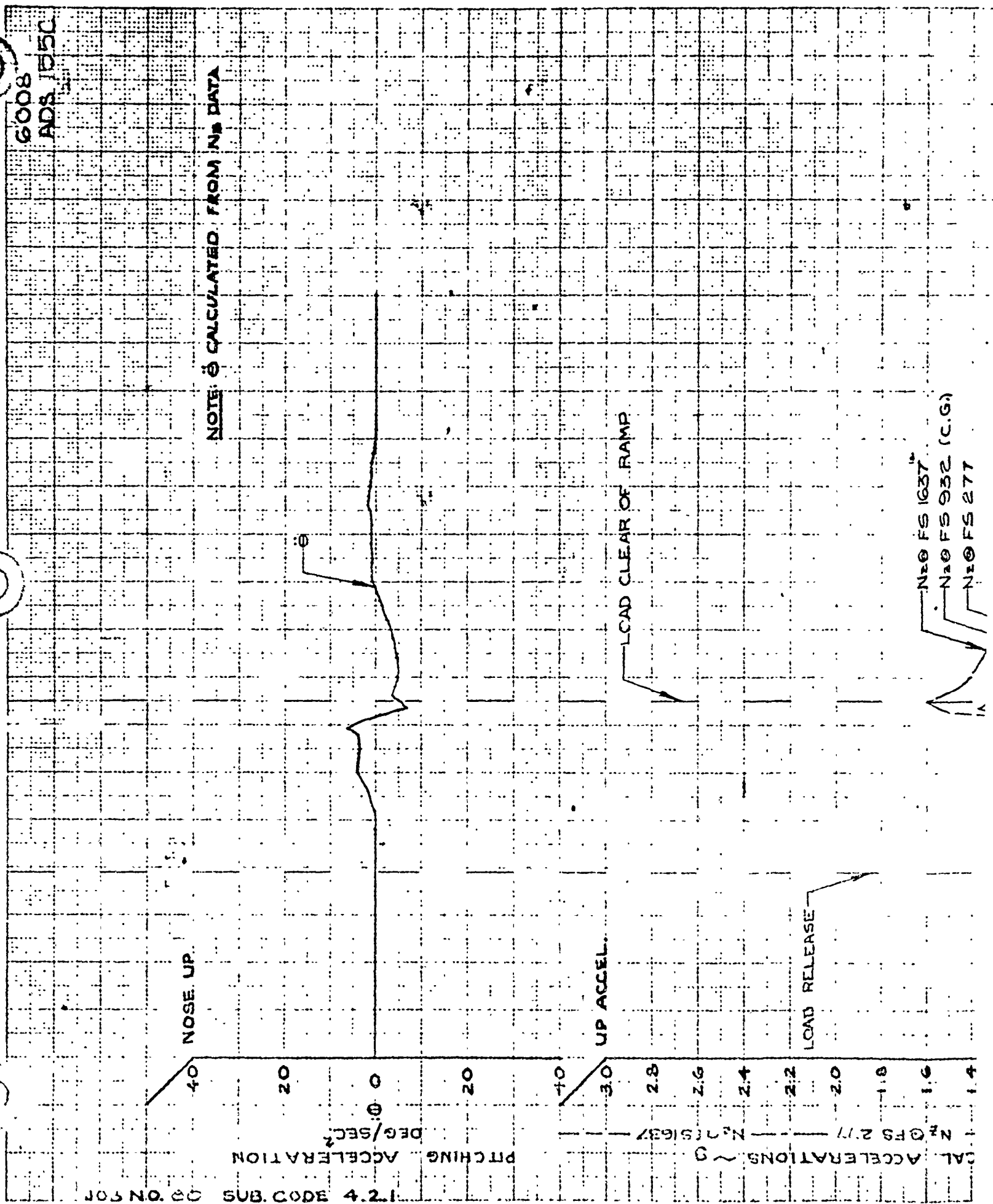
FIGURE D-26B

6008
ADS155B



6008
ADS 155C

NOTE: θ CALCULATED FROM N_z DATA



PREPARED BY DTM
DATE 9-1-65
CHECKED BY *up*

UNITED STATES AIR FORCE
AIR FORCE RESEARCH AND DEVELOPMENT COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

REPORT NO. ER 5473
MODEL C-141A
DATE D-165

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-8077 LAC 6008
TEST DATE 8-31-65
FLIGHT 173 DROP NO 22R-4

SHEET 3 OF 7

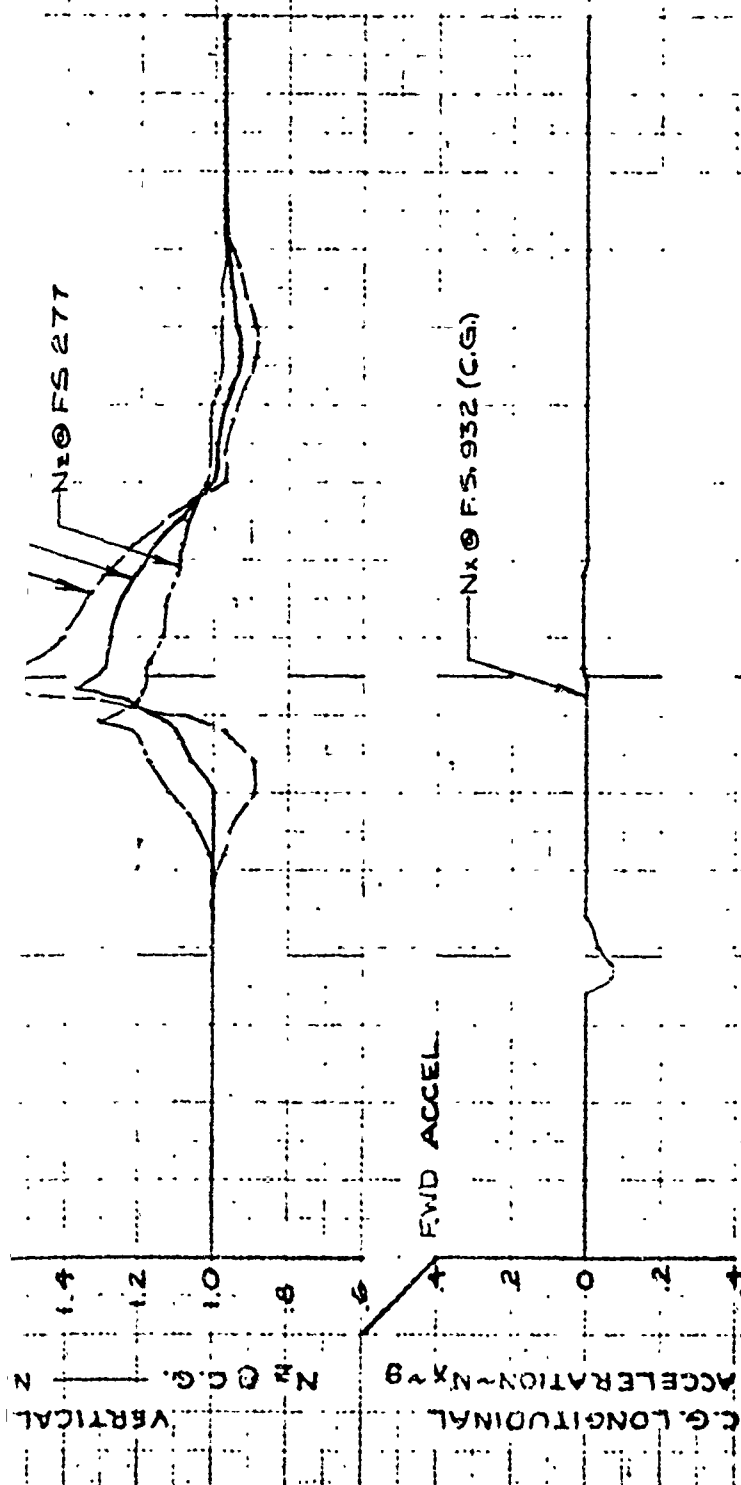
CARGO WT. 19,650 LBS.

NOTE:
SEE FIGURE D26A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME - SEC.

FIGURE D-26C

6008
ADS 35C



6008
ADS-1551

JOB NO 60 SUB CODE 421

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

g's

RAMP LIP

LOAD C.G. POSITION

LOAD CLEAR OF RAMP

LOAD RELEASE

LOAD ACCELERATION DATA

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA



PREPARED BY _____

DATE 9-1-63

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL b C-141A

PAGE D-166

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 8-31-65

FLIGHT 173

DROP NO. 22R-4

SHEET 4 OF 7

CARGO WT. 19650 LBS

NOTE:

SEE FIGURE D-26A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

EXTRACTION FORCE

10

9

8

7

6

5

4

3

2

1

0

0

1

2

3

4

5

6

7

8

9

10

11

12

ELAPSED TIME - SEC

FIGURE D-26D

EXTRACTION FORCE - LBS $\times 10^{-3}$

6008

ADS-155 D

JOB NO. 80 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD

LBS. X 10⁻³

R.H.

L.H.

TENSION

ADS LINK AXIAL LOAD

LBS. X 10⁻³

R.H.

L.H.

TENSION

VERTICAL LOAD

LBS. X 10⁻³

R.H.

L.H.

PULL DOWN

R.H.

PULL RIGHT

DE LOAD

LBS. X 10⁻³

R.H.

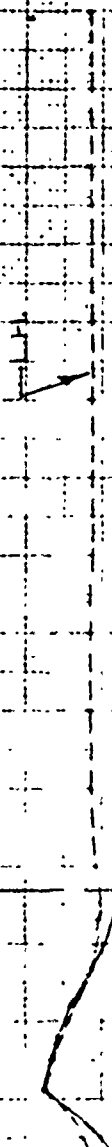
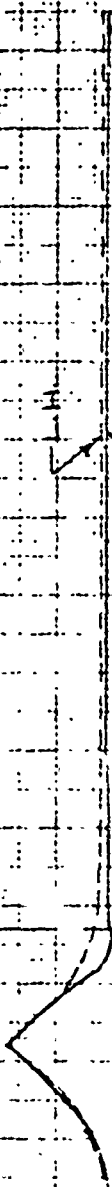
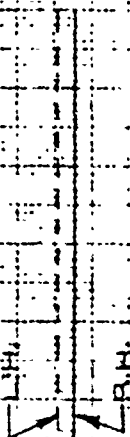
L.H.

LOAD RELEASE AT 195 SEC.

RAMP SIDE LOAD ~ NA

LOAD CLEAR OF RAMP

6008
ADS-155-E



PREPARED BY MBH
DATE 9-1-65
JUP

REPORT NO ER 5473
MODEL C-141A
PAGE D-167

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE: 8-31-65
FLIGHT 173 DROP NO 22R4

SHEET 5 OF 7

CARGO WT. 19,650 LBS.

NOTE:
SEE FIGURE D-26A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

RAMP SIDE LOAD ~ NA

RAMP HINGE
SIDE
DRAG LOAD
R.H. L.H.
LBS. X 10⁻³
25 20 15 10 5 0
RUSH FWD.
2.0 1.0 0

FIGURE D-26 E

6008
ADS-155-E



6008
ADS-155F

COMPRESSION

1.2.4 3003.BNS OR DN BOR
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10⁻³
RH
LH

LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR

VERTICAL BENDING ~ FS 1568
INCH-LBS X 10⁻⁶

MY @ FS 1568

LOAD CLEAR OF RAMP

DOWN LOAD

FS 1040

MY @ FS 1040

PREPARED BY DTM
DATE 8-31-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-160

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 8-31-65

FLIGHT 173

DROP NO 22R-4

SHEET 6 OF 7

CARGO WT. 19650 LBS

NOTE:

SEE FIGURE D-26 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

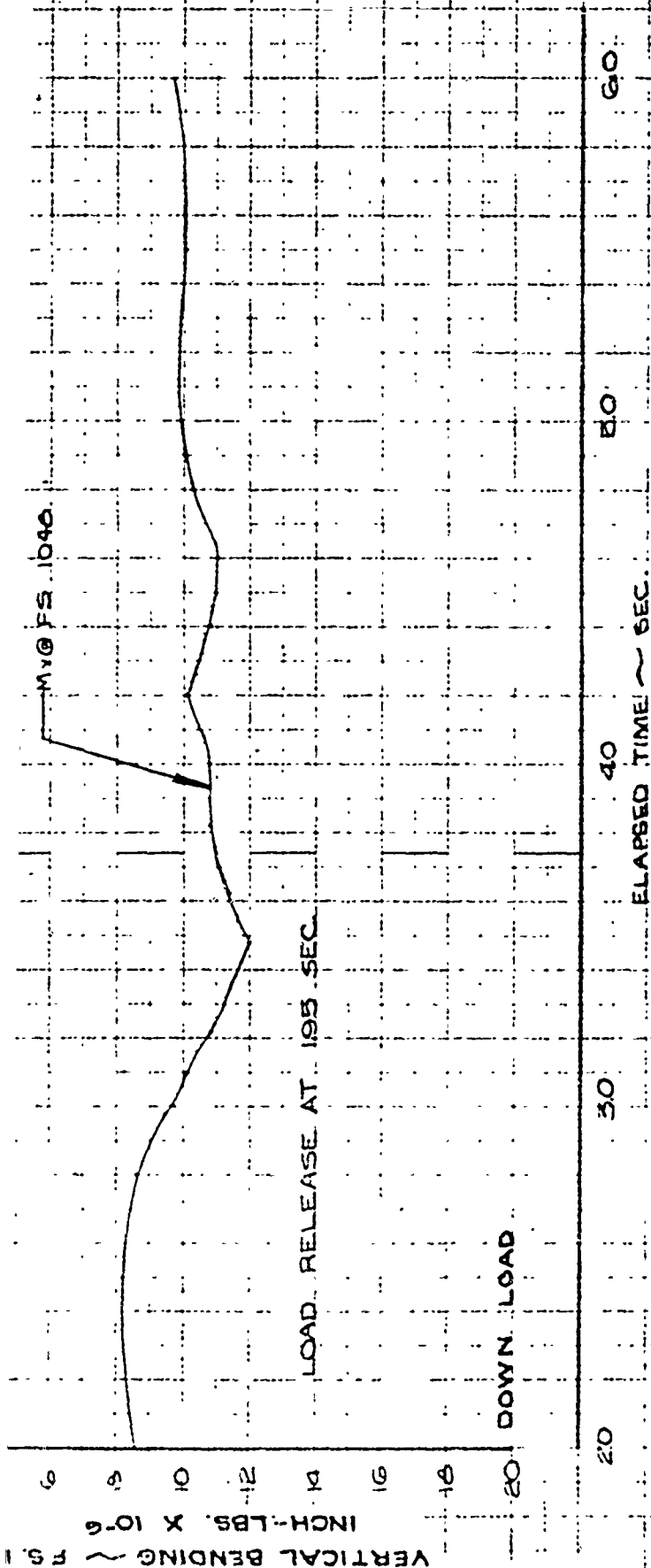
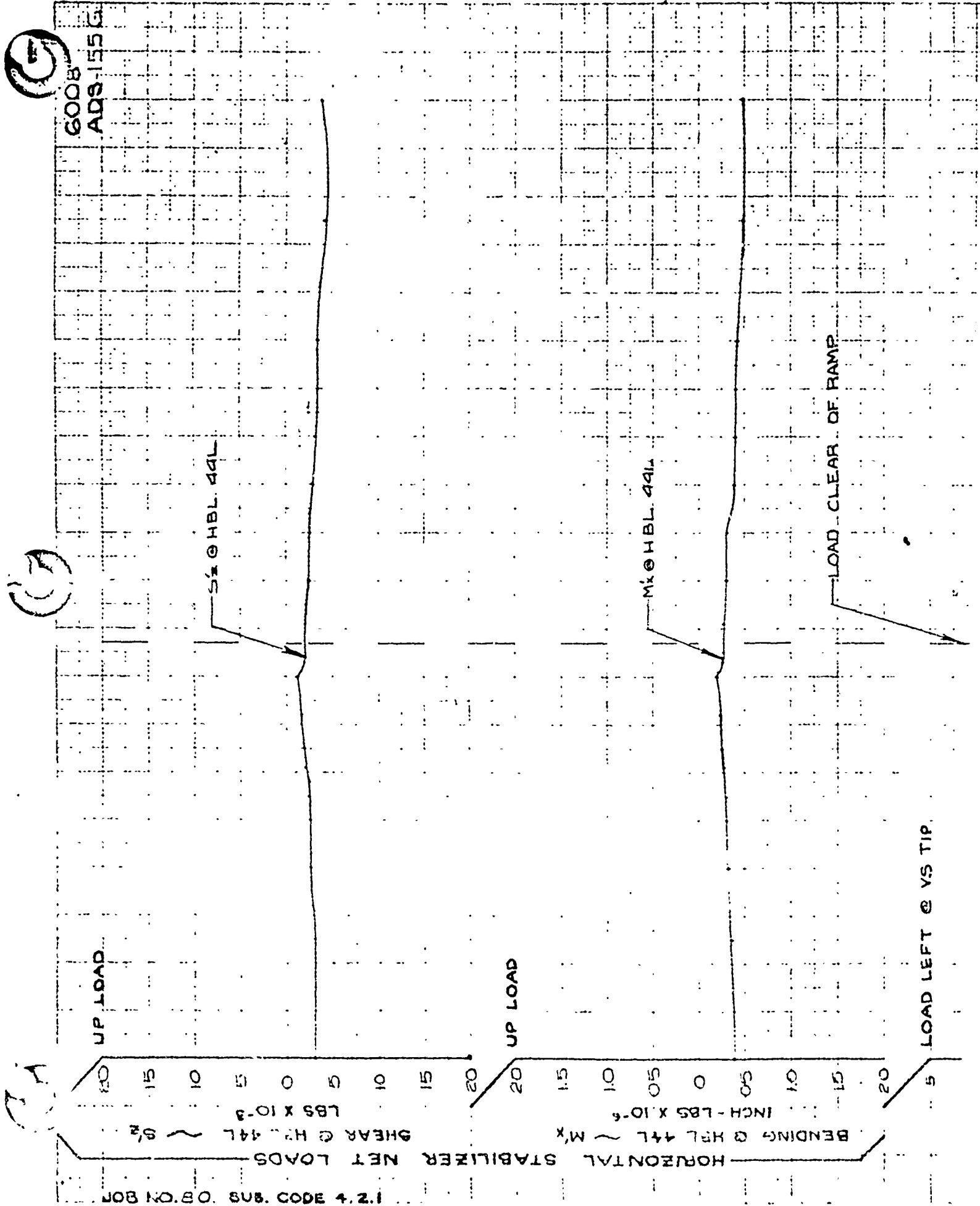


FIGURE D-26 F

6008
ADS-155-F



6008
 ADS 155G

12.4.8008 SUB CODE 4.2.1

PREPARED BY DTM

DATE 9-1-65

W. H. H. JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE D-169

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 8-31-65

FLIGHT 173

DROP NO. 22R-4

SHEET 7 OF 7

CARGO WT. 9650 LBS.

NOTE:
SEE FIGURE 2-25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

60

50

40

30

20

MIC VSS 345

LOAD RELEASE AT 195 SEC.

FIGURE 2-25G

VERTICAL STABILIZER NET LOADS

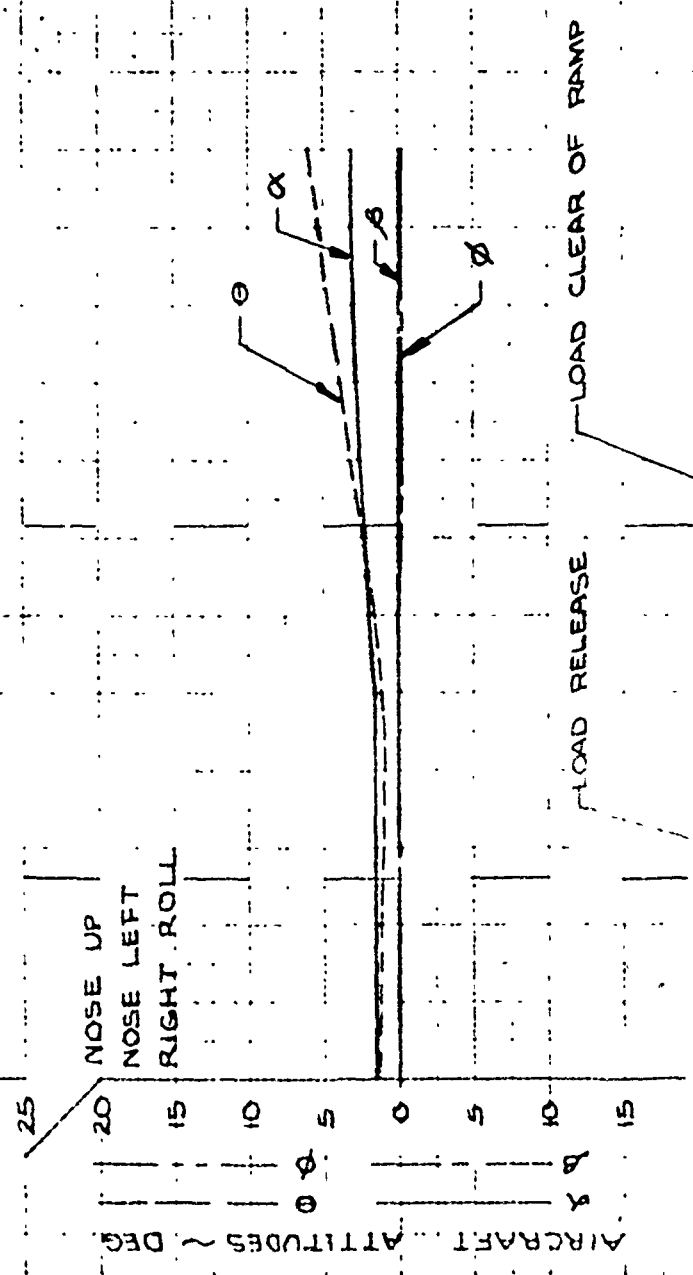
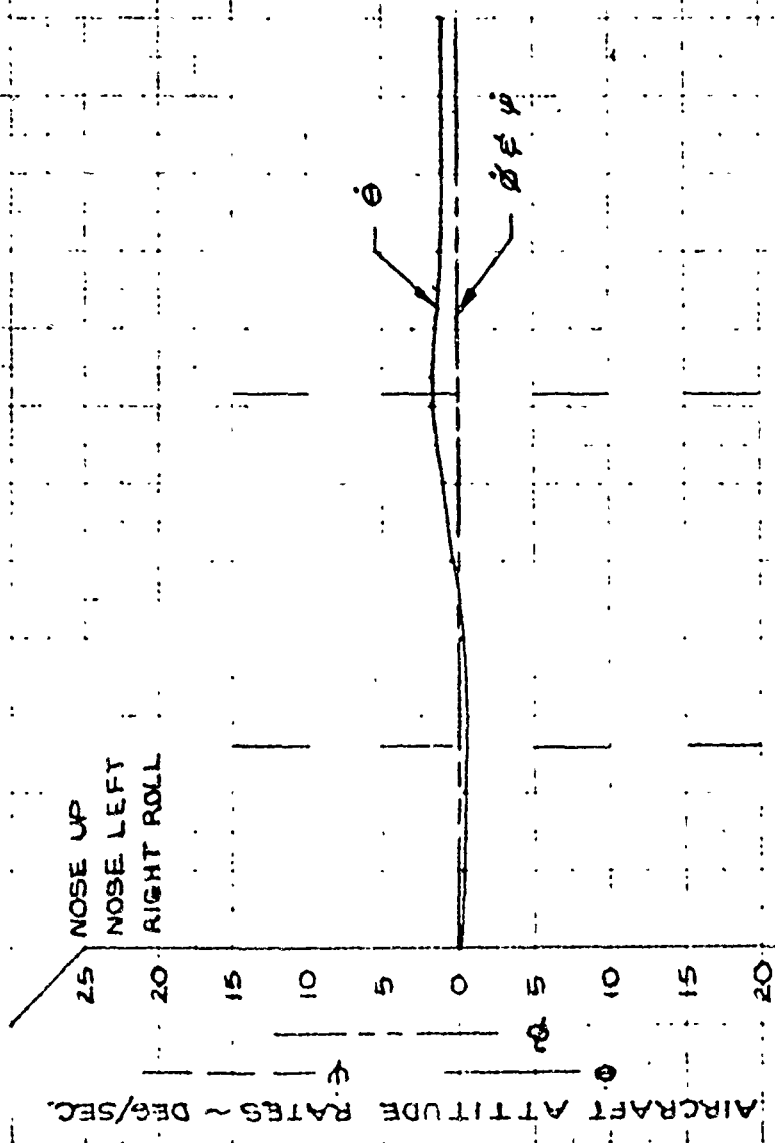
BENDING @ VSS 345 ~ Mx

~ INCH-LBS X 10⁻⁶

6008

ADS-155C

6008
ADST80A



PREPARED BY **RSA**
DATE **5-18-65**
REVISION **1**

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **D-170**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF638077 **LAC 6008**

TEST DATE **~5-17-65**

FLIGHT **~127** DROP NO. **~25**

SHEET **1** OF **5**

CARGO WT. 6060 LBS.

RUN CONDITIONS

1. G.W. **~166900 LBS.**
2. C.G. PRIOR TO DROP **~24.0 % MAC**
3. C.G. AFTER DROP **~29.5 % MAC**
4. FLAPS **~55 %**
5. GEAR **~UP**
6. AVG. EPR **~1.20 (4 ENGINES)**
7. α_H **~1.7 DEG (AC N.U.)**

CARGO DESCRIPTION

1. TYPE CARRIER **~ PLATFORM**
2. LENGTH **~96 IN.**
3. CARGO C.G. POSITIONS
LONG. **~FS 537**
VERT. **~WL 188**

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES **~2**
2. CHUTE SIZE **~15'**
3. RATED CHUTE FORCE/CARGO WT. **~137**
4. EXTRACTION LINE LENGTH **~140 FT**

FIGURE D-27A

ALTITUDE
H_{PC} - FEET

AIR SPEED
V₀ - KNOTS

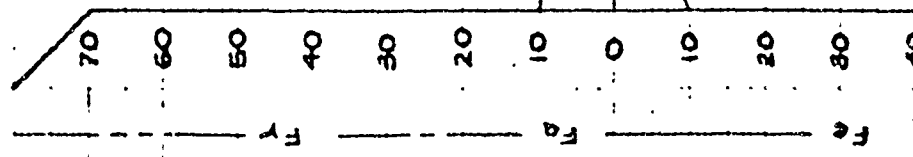
ELAPSED TIME - SEC

6008
ADS-50A

REVISED 12-15-65
MRB

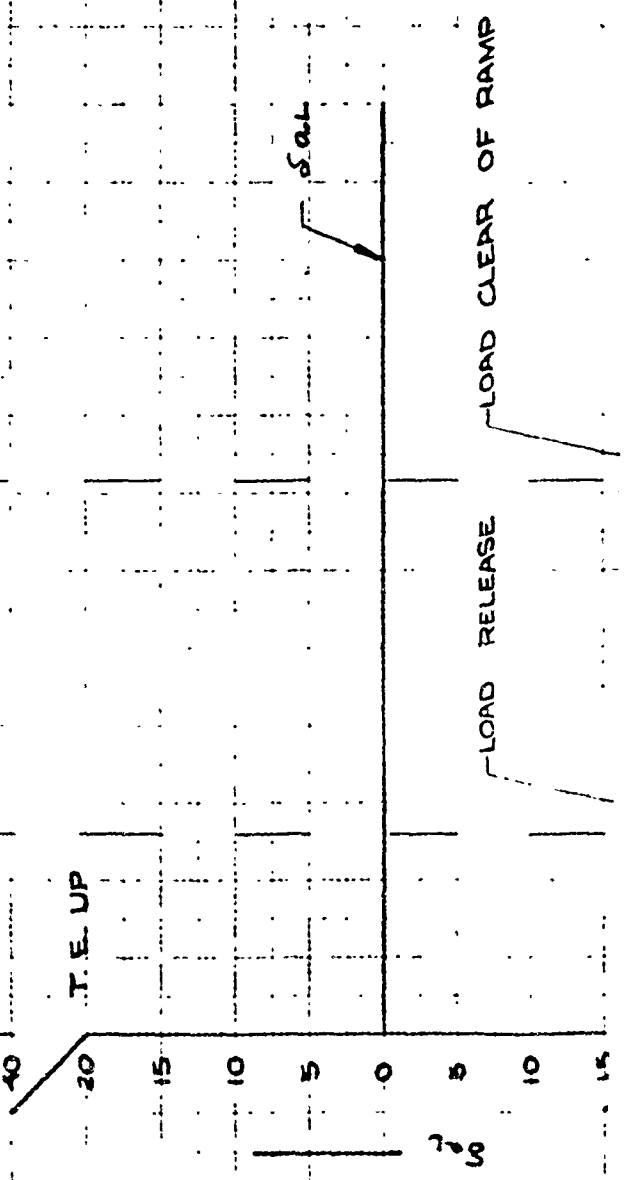
6008
ADS-80B

RIGHT ROLL
PUSH LEFT
PULL



12.4 3003 INS 2433 NO 200

LEFT AILERON POSITION ~ DEG.



REF ID: A5473
DATE 5-18-65
JWD

ER 5473
C-141A
D-171

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE ~ 5-17-65
FLIGHT ~ 127 DROP NO ~ 23

SHEET 2 OF 5

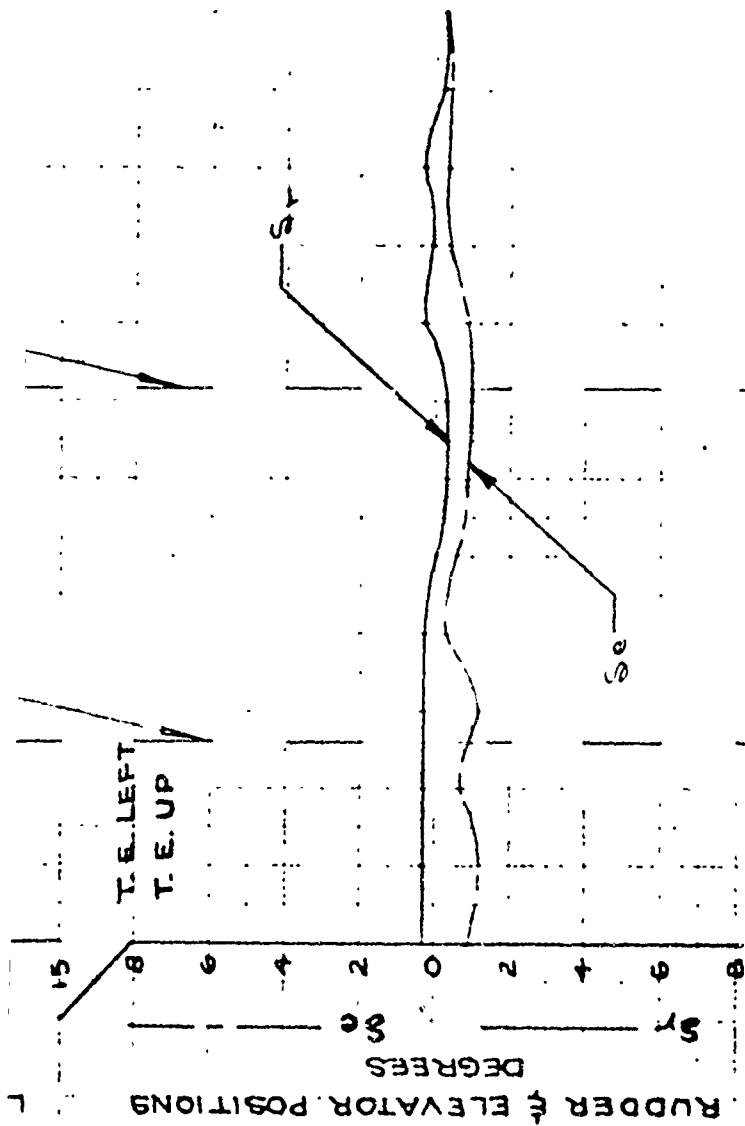
CARGO WT. 6060 LBS

NOTE:
SEE FIGURE D-27A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME ~ SEC

FIGURE D-27B

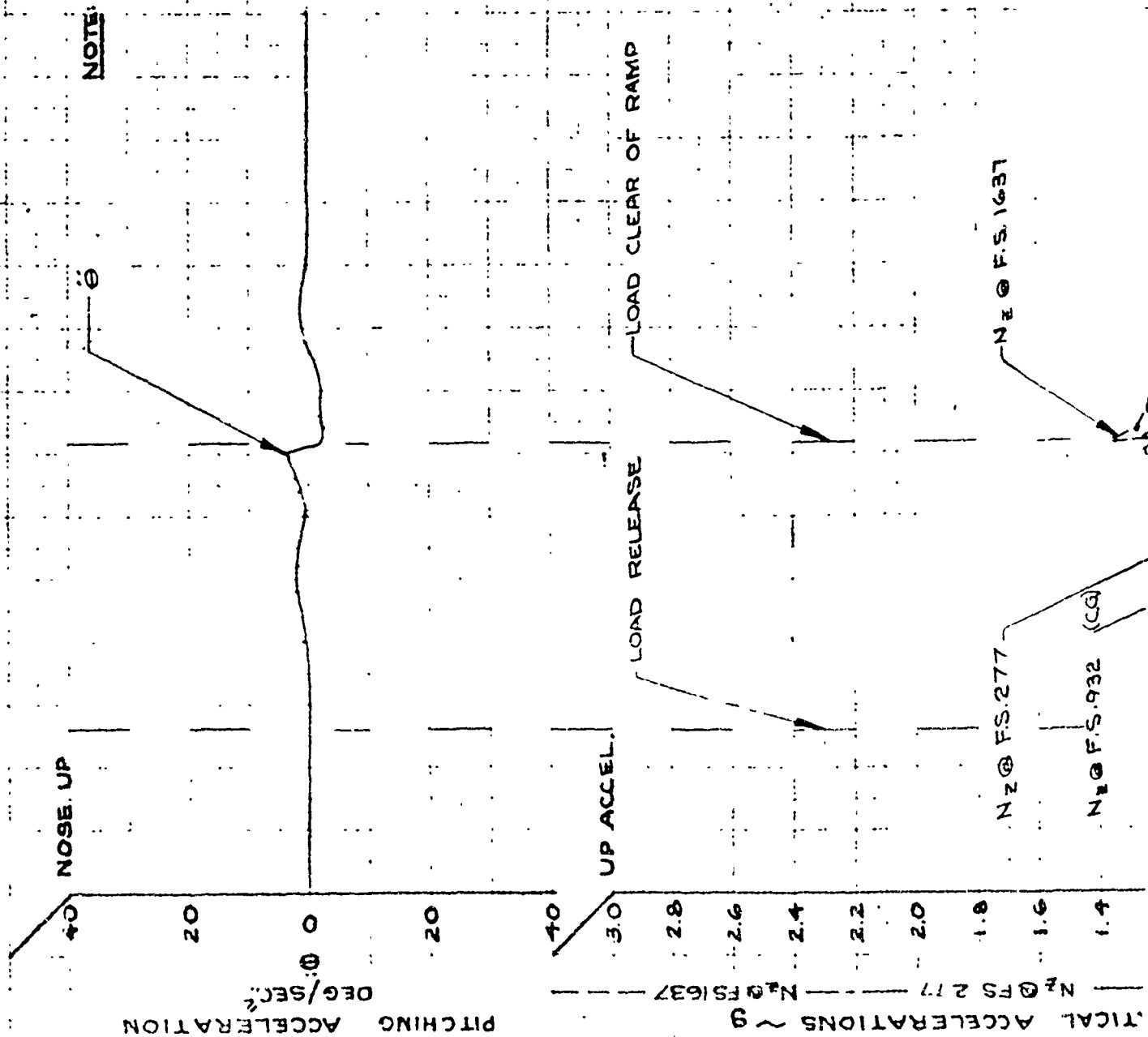
6008
ADS-808



6008
ADS-80C

NOTE: $\ddot{\theta}$ CALCULATED FROM N_z DATA

JOB NO. ADS-43 SUB. CODE 4.2.1



TED.
8-18-65
John

ER 5473
C-141A
D-172

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C141A
AFG3-B077 LAC 6008
TEST DATE: 5-17-65
FLIGHT ~ 127 DROP NO ~ 23

SHEET 3 OF 5

CARGO WT. 6060 LBS

NOTE:
SEE FIGURE D-27A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

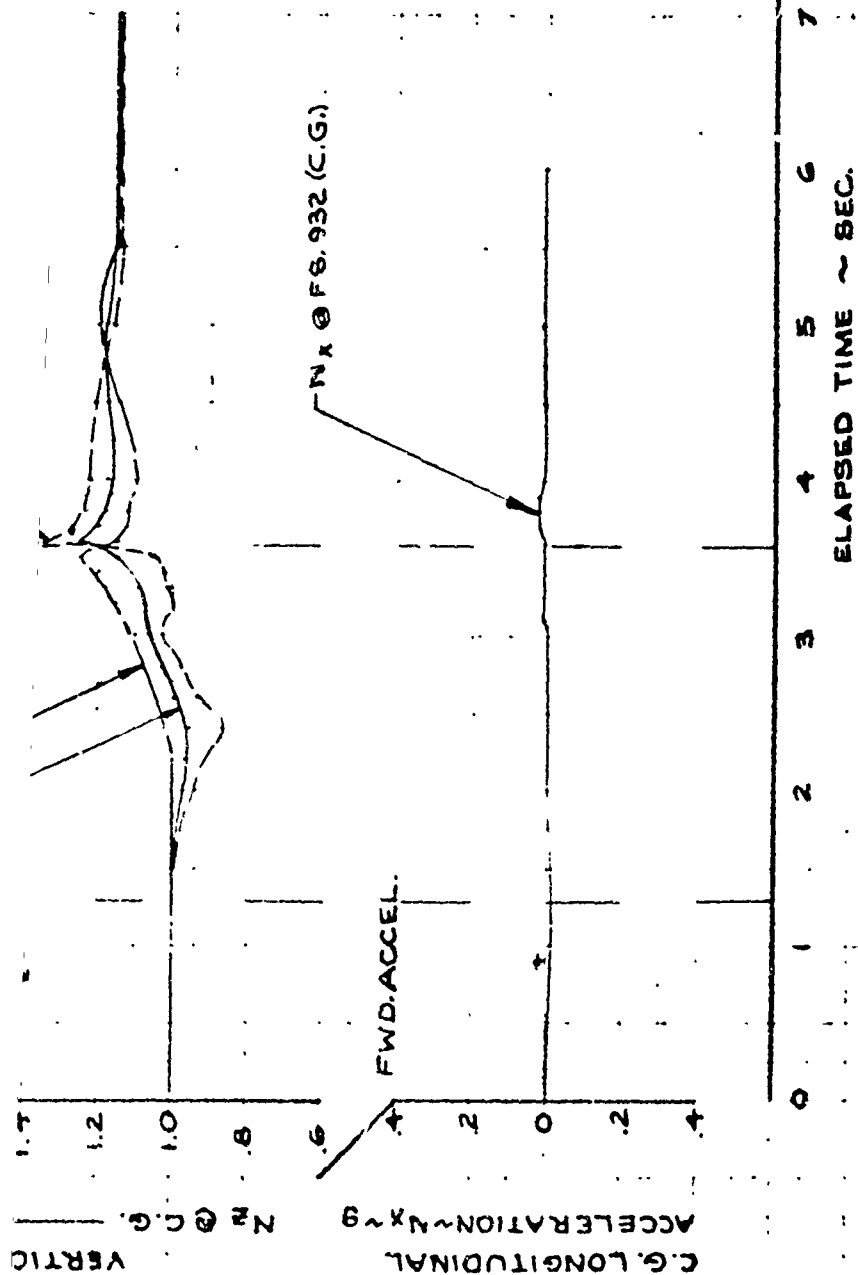
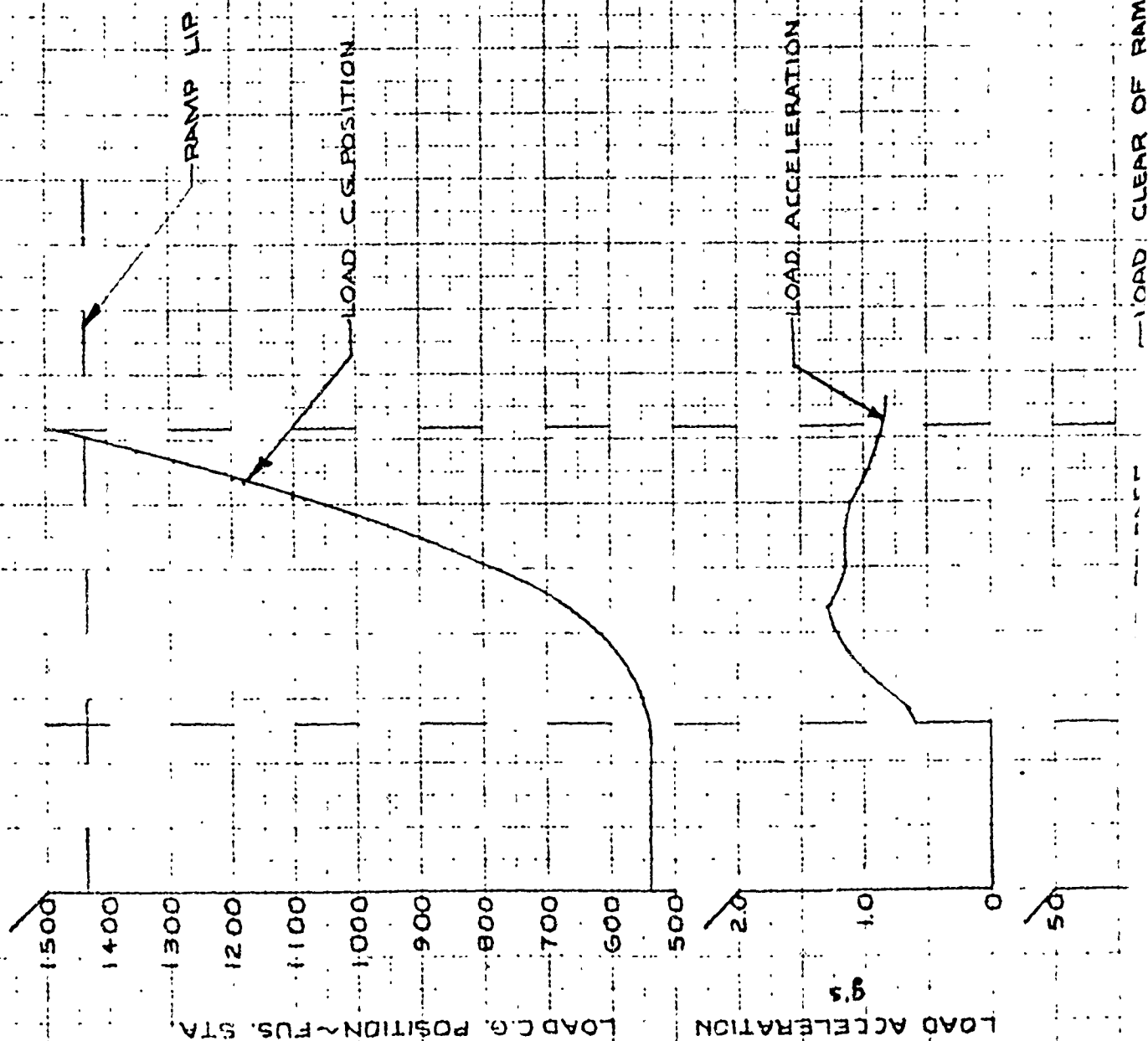


FIGURE D-27C

6008
ADS-80C

6008
ADS80D

JOB NO. A03 435 SUB CODE 4.21



NOTE: LOAD ACCELERATION
CALCULATED FROM
EXTRACTION FORCE DATA.

PREPARED BY RSA
DATE 5-17-65
CHECKED BY [Signature]

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-273

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008

TEST DATE 5-17-65
FLIGHT 127 DROP NO. 23

SHEET 4 OF 5

CARGO WT. 6060 LBS

NOTE:

SEE FIGURE D-27A SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

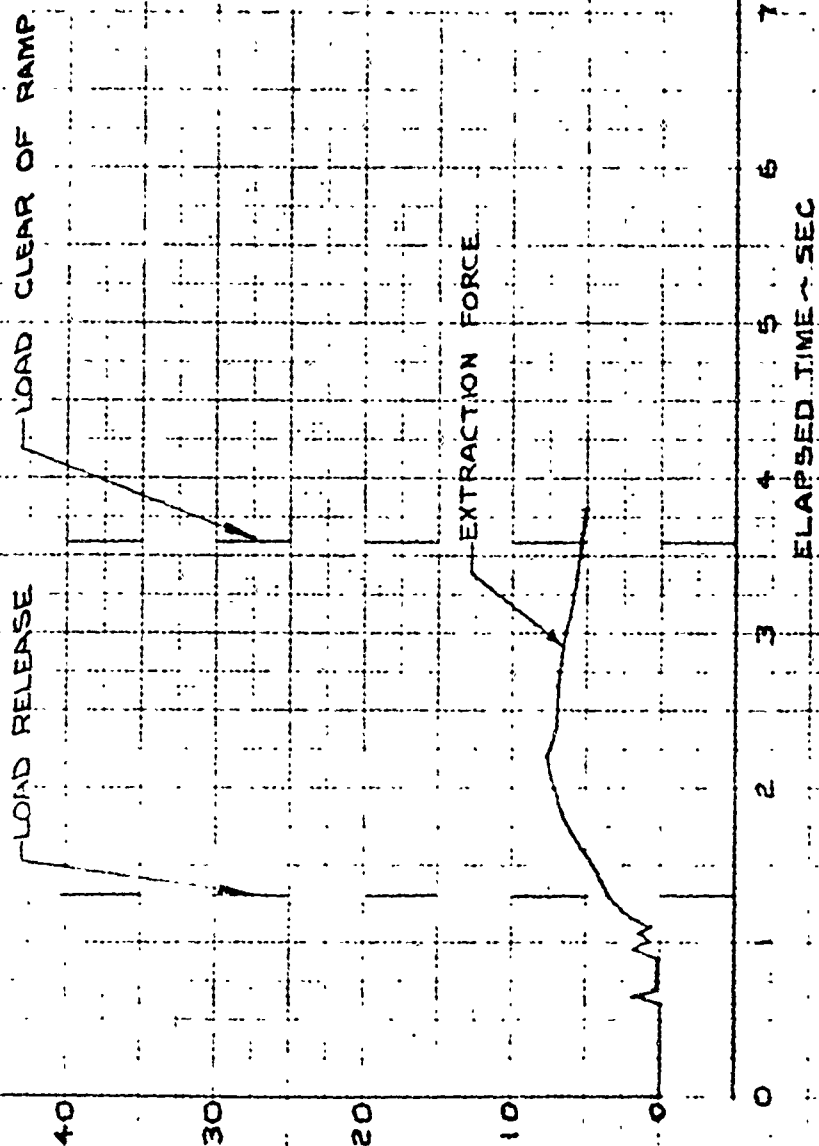


FIGURE D-27D

6008
ADS. 80 D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM
Checked			TITLE			D-174
Approved					Model C-141A	Report No ER 5473

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A
 AF 63-8077 LAC 6008
 FLIGHT 127 TEST DATE: 5-17-65
 G.W. 166,900 LBS. A/S 150 KCAS.
 C.G. 24.0% MAC. ALT. ~ 4,985 FT.
 DROP WT. ~ 6,060 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	3.1
2	ANGLE OF PITCH	"	5.9
3	C.G. VERT. ACCEL.	g's	1.25
4	C.G. LONG. ACCEL.	"	- 0.148
5	VERT. ACCEL. @ F.S. 277	"	1.24
6	VERT. ACCEL. @ F.S. 1637	"	1.35
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	15.86
8	VERT. BEND. @ F.S. 1568	"	0.813
9	BENDING ~ M'x @ HBL 44L	"	0.379
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	5.086
11	PITCH TRIM ACTUATOR ~ Sz	"	- 5.050
12	R.H. RAMP ACTUATOR LOAD	"	0.100
13	L.H. " " " "	"	0
14	R.H. SPIDER ARM LOAD	"	2000
15	L.H. " " " "	"	1.875
16	R.H. PETAL DOOR ACTUATOR LOAD	"	6.720
17	L.H. " " " "	"	7.640
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁵	0.426
20	L.H. " " " "	"	0.624
21	R.H. RAMP HINGE DRAG LOAD	"	- 0.525
22	L.H. " " " "	"	- 0.532
23	RAMP HINGE TOTAL SIDE LOAD	"	- 1.125
24	EXTRACTION CHUTE FORCE	"	7.933
25	CARGO LONG. ACCEL.	g's	1.30

FIG. D-27E
 ADS-80E

6008
ADS 81A

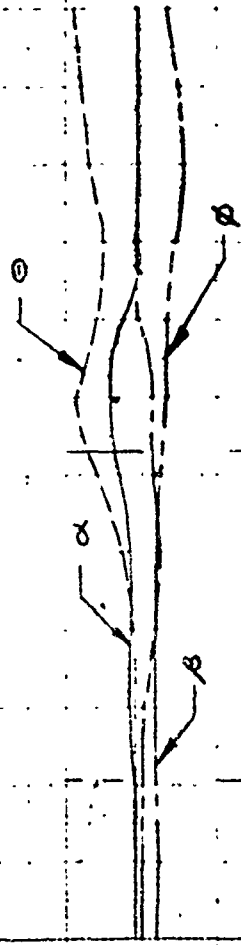
NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.



NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDES ~ DEG.



LOAD RELEASE

FILE RSA
DATE 5-19-65

REF ID: ER 5473
MODEL C-141A
TALE D-175

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077 LAC 6008

TEST DATE ~ 5-18-65

FLIGHT ~ 12B DROP NO. ~ 24

SHEET 1 OF 5

CARGO WT. 21,550 LBS

RUN CONDITIONS

1. G.W. ~ 181,500 LBS
2. C.G. PRIOR TO DROP ~ 19.5% MAC
3. C.G. AFTER DROP ~ 30.2% MAC
4. FLAPS ~ 67%
5. GEAR ~ UP
6. AVG. EPR ~ 1.27 (4 ENGINES)
7. α ~ 3.0 DEG. (A/C N.U.)

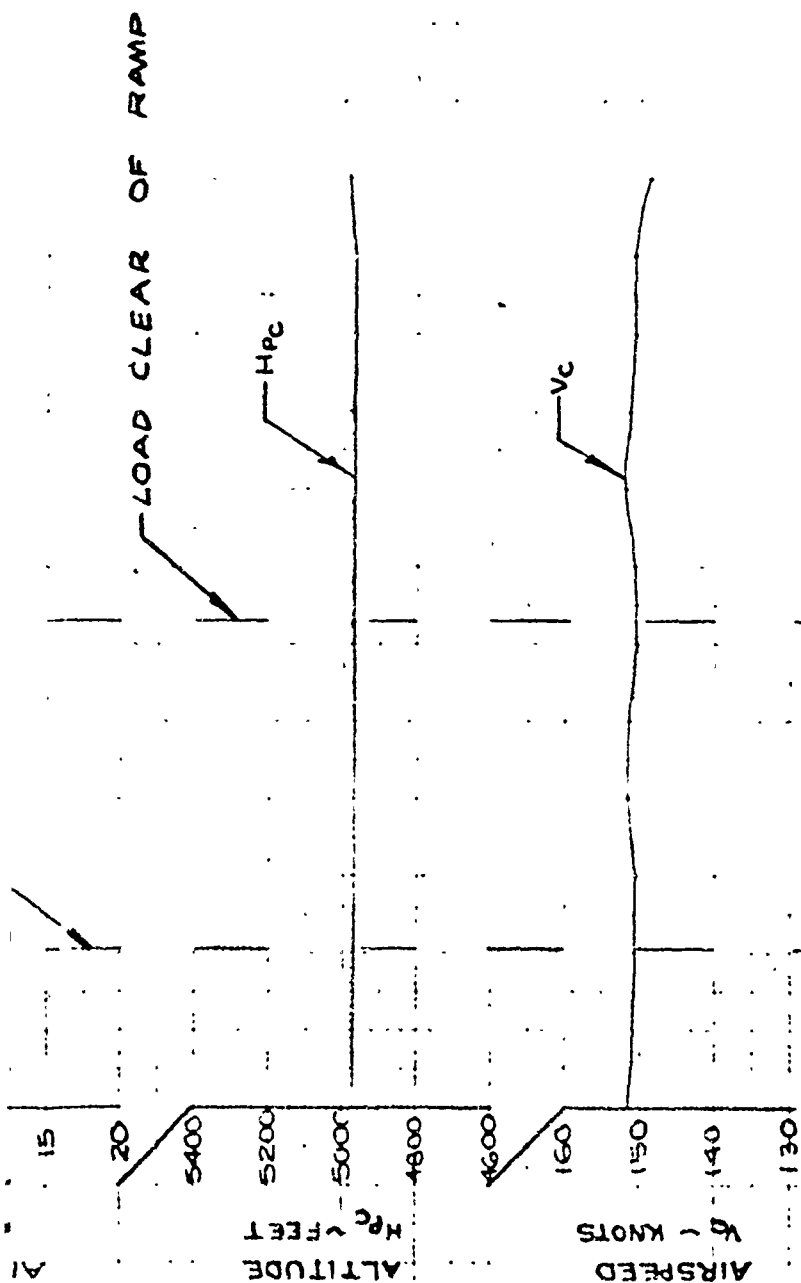
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3699
VERT. ~ WL189

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 28'
3. RATED CHUTE FORCE/CARGO WT ~ 1.14
4. EXTRACTION LINE LENGTH ~ 140'

FIGURE 228A



6008

ADS 81A

REVISED 12-15-65

6und
ADS 81B

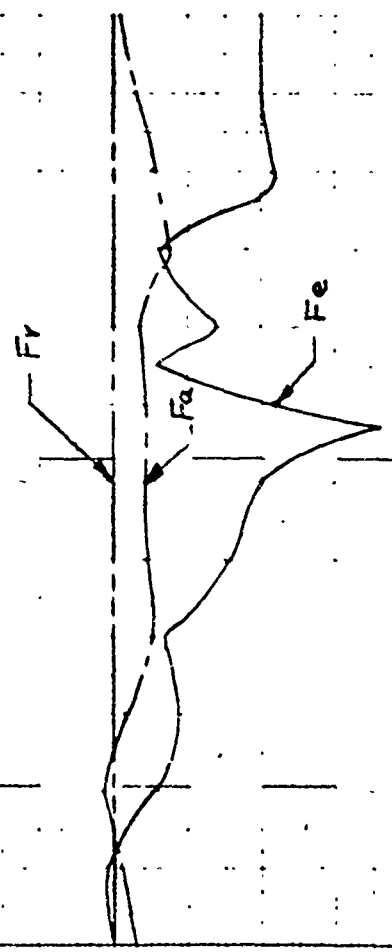
RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0
10
20
30
40

F_y F_a F_e

CONTROL FORCES ~ LBS.

JOB NO. 44 SUB. CODE 4.21

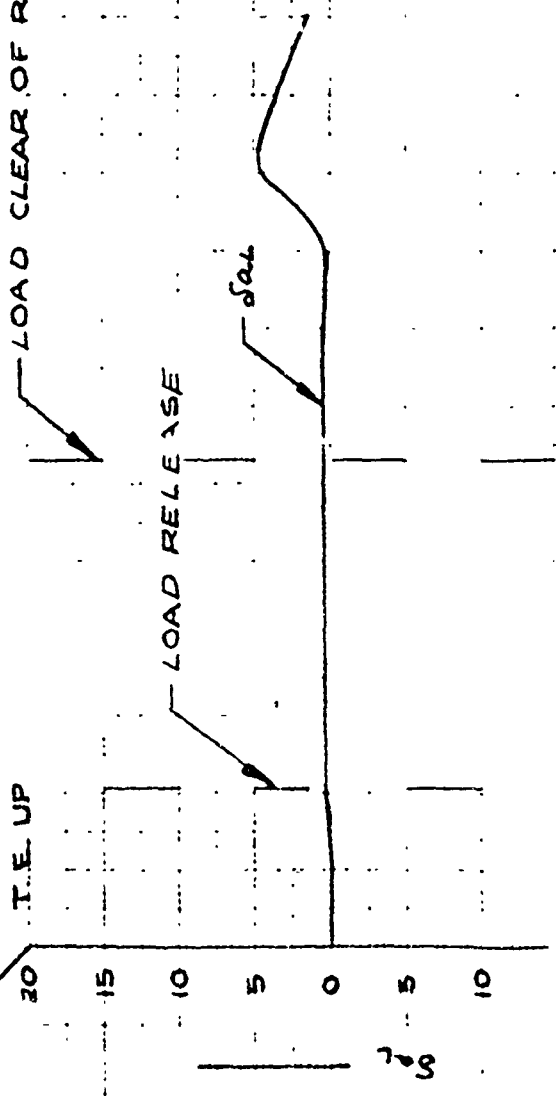


LOAD CLEAR OF RAMP

LOAD RELEASE

T.E. UP

LEFT AILERON POSITION ~ DEG.



RSA
DATE 5-19-65

ER 5473
C-141A
D-176

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE ~ 5-18-65
FLIGHT ~ 128 DROP NO ~ 24

SHEET 2 OF 5

CARGO WT. 21,550 LBS

NOTE:
SEE FIGURE D-28B SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

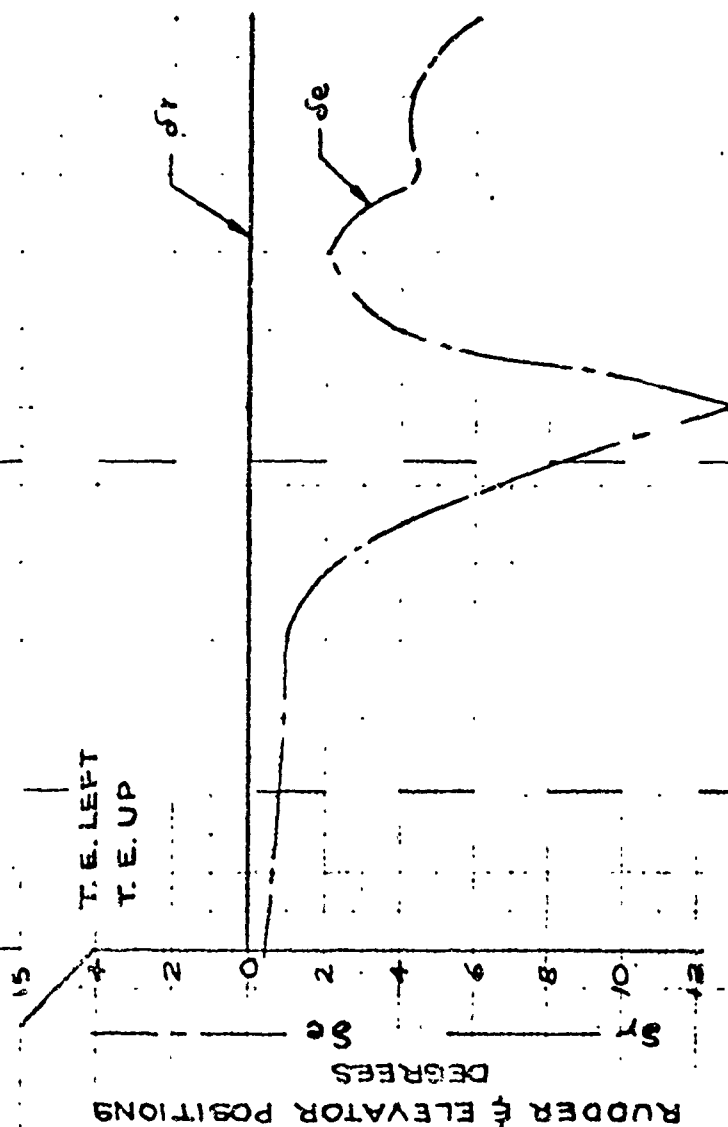


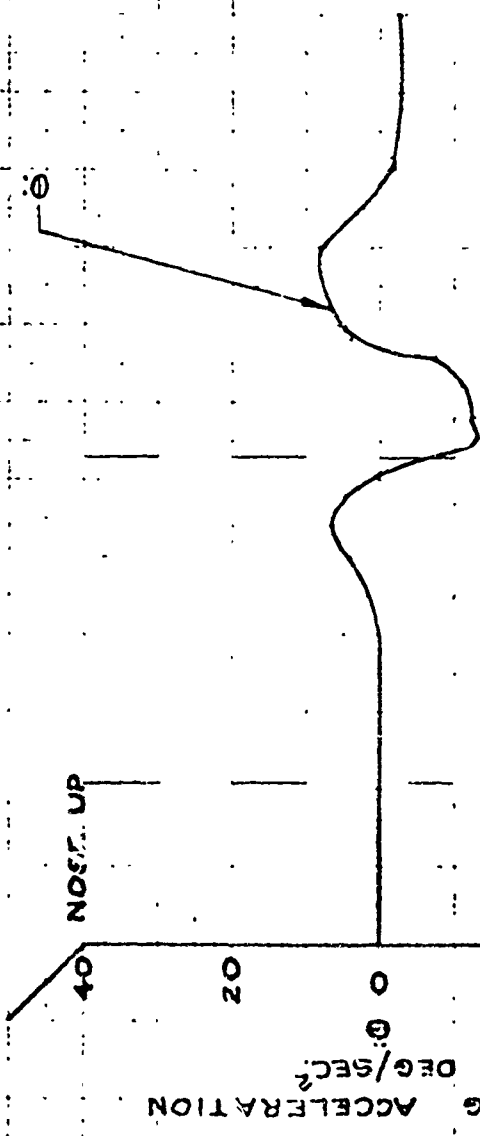
FIGURE D-28B

6008
ADS 818

6008
ADS-81C

NOTE: θ CALCULATED FROM NA DATA

JOB NO. ADS-44SUB. CODE 4.2.1



LOAD CLEAR OF RAMP

LOAD RELEASE

$N_1 \circ F.S. 1637$

$N_1 \circ F.S. 932 (C.G.)$

$N_1 \circ F.S. 277$

UP ACCEL.

AL ACCELERATIONS ~ g

$N_1 \circ F.S. 277$ $N_1 \circ F.S. 1637$

T.E.D.
5-19-66

ER 5473
C-141A
D-177

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C141A

AFG3-8077

LAC 6008

TEST DATE: 5-18-65

FLIGHT-128

DROP NO-24

SHEET 3 OF 5

CARGO WT. 21550 LBS

NOTE:
SEE FIGURE ^{D28A} SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

10
9
8
7
6
5
4
3
2
1
0
ELAPSED TIME - SEC.

N x 0 F.S. 932 (C.G.)

FWD. ACCEL.

C.G. LONGITUDINAL
ACCELERATION - $N \times g$

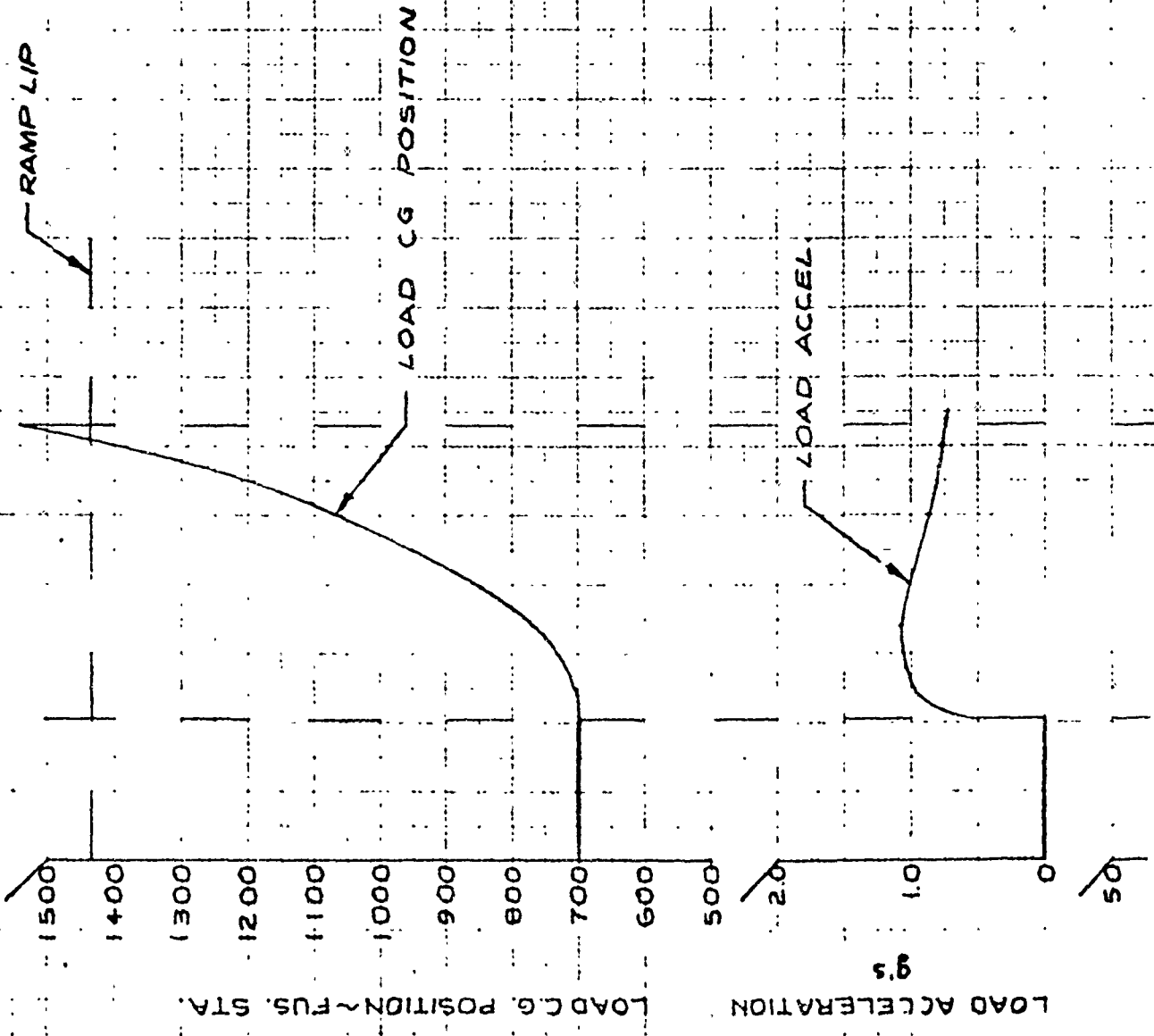
N z 0 C.G.
VERTICAL

FIGURE D28C

6008
ADS-81C

6008
ADS81D

1)



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.

JOB NO 44 SUB CODE 4.2

PREPARED BY **RSA**
DATE **5-19-65**
CHECKED BY *[Signature]*

LOCKHEED AIRCRAFT COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
MODEL **C-141A**
TA **D-178**

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL **C-141A**
AF 63-8077 LAC 6008
TEST DATE **~5-18-65**
FLIGHT **~128** DROP NO. **~24**

SHEET 4 OF 5

CARGO WT. 21550 LBS

NOTE:
SEE FIGURE D-28A, SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

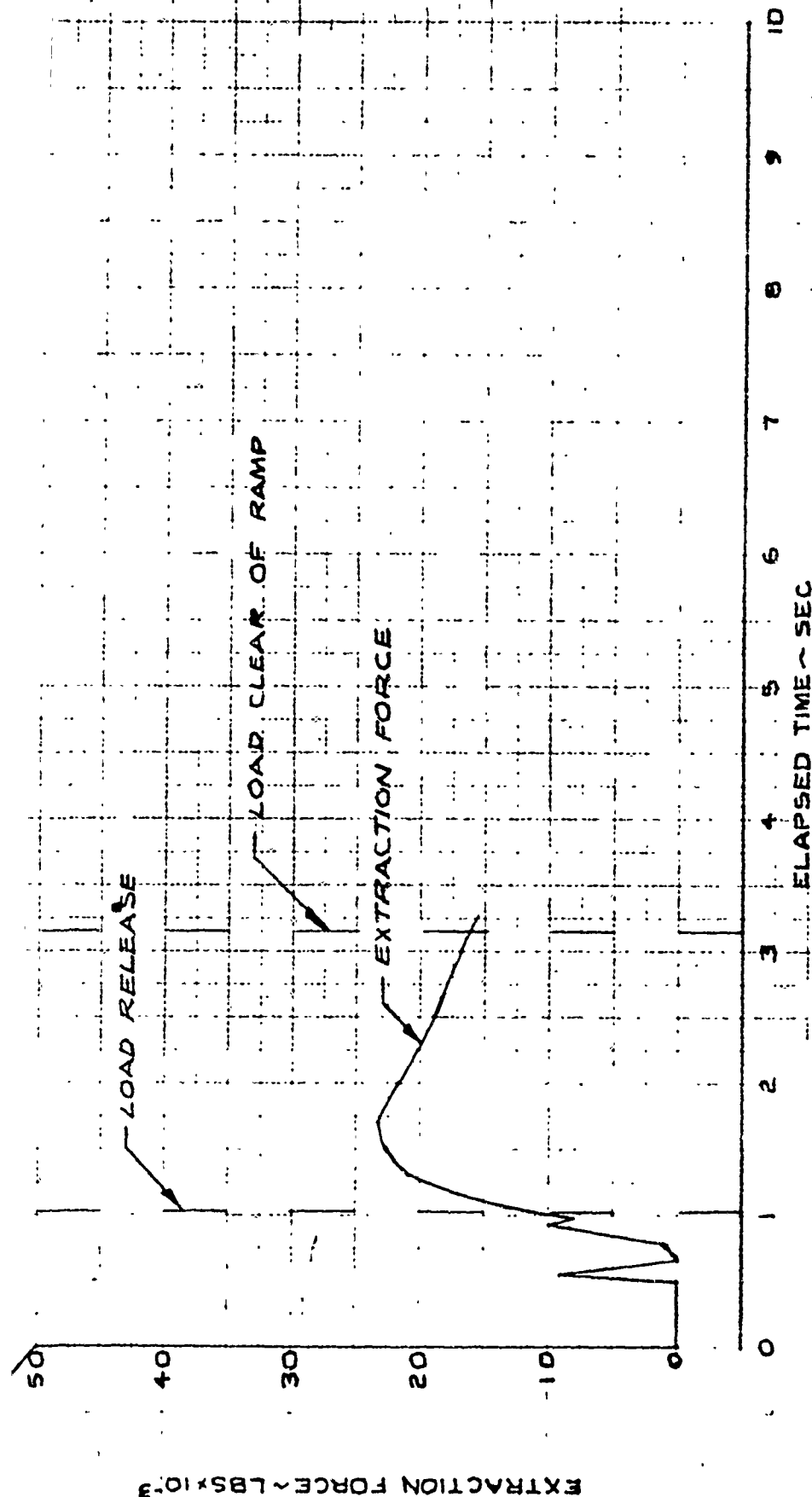


FIGURE D-29D

6008
ADS 81D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM
Checked			TITLE	Model C-141A		
Approved				Report No. ER 5473		

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A
AF 63-8077 LAC 6008
FLIGHT 128 TEST DATE: 5-18-65

G.W. 181,500 LBS. A/S 152 KCAS

C.G. 19.5 %MAC ALT. ~ 4,980 FT.

DROP WT. ~ 21,550 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.1
2	ANGLE OF PITCH	"	4.4
3	C.G. VERT. ACCEL.	g's	1.48
4	C.G. LONG. ACCEL.	"	0.011
5	VERT. ACCEL. @ F.S. 277	"	1.38
6	VERT. ACCEL. @ F.S. 1637	"	1.86
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	N.A.
8	VERT. BEND. @ F.S. 1568	"	0.22
9	BENDING ~ M'x @ HBL 44L	"	0.03
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	0.37
11	PITCH TRIM ACTUATOR ~ S'z	"	7.96
12	R.H. RAMP ACTUATOR LOAD	"	0.19
13	L.H. " " " "	"	0.49
14	R.H. SPIDER ARM LOAD	"	7.69
15	L.H. " " " "	"	7.59
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8.19
17	L.H. " " " "	"	8.40
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0.198
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	3.89
20	L.H. " " " "	"	3.45
21	R.H. RAMP HINGE DRAG LOAD	"	- 2.04
22	L.H. " " " "	"	- 1.65
23	RAMP HINGE TOTAL SIDE LOAD	"	- 1.143
24	EXTRACTION CHUTE FORCE	"	23.31
25	CARGO LONG. ACCEL.	g's	1.06

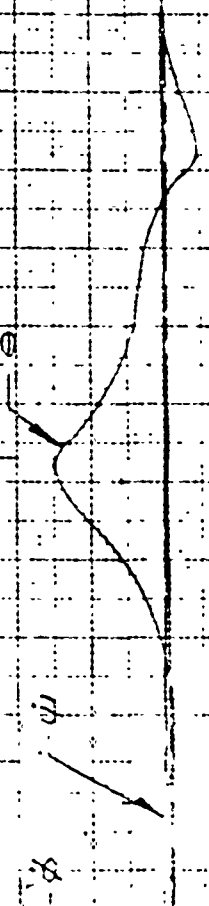
FIG. D-28E
ADS-81E

6008
ADSD-1A

25 NOSE UP
20 NOSE LEFT
15 RIGHT ROLL
10
5
0
5
10
15
20
25

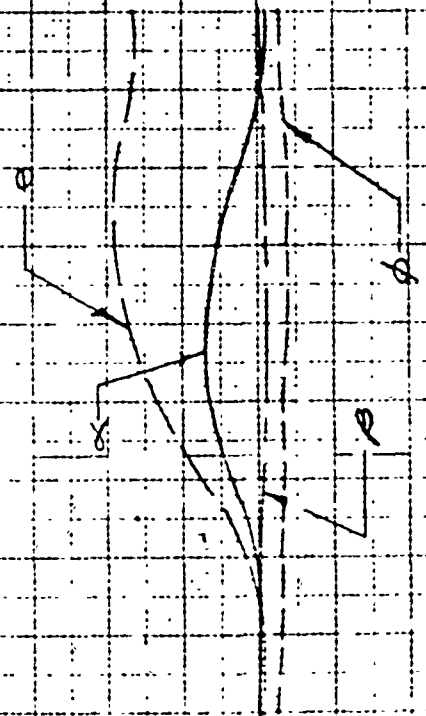
AIRCRAFT ATTITUDES - DEGS

UOB 110-00505UB CODE 421



20 NOSE UP
15 NOSE LEFT
10 RIGHT ROLL
5
0
5
10
15
20
25

AIRCRAFT ATTITUDES - DEGS



LOAD RELEASE / LOAD CLEAR OF RAMP

PREPARED BY FCW
DATE 6-7-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AERONAUTICAL CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-180

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077

LAC 6008

TEST DATE 6-7-65

FLIGHT ~ 138

DROP NO. 25

SHEET 1 OF 7

CARGO WT 35250 LBS.

RUN CONDITIONS

1. G.W. ~ 194200 LBS.
2. C.G. PRIOR TO DROP ~ 19.2
3. C.G. AFTER DROP ~ 30.0
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. α_H ~ 2.65 DEG. (A/C N.U.)

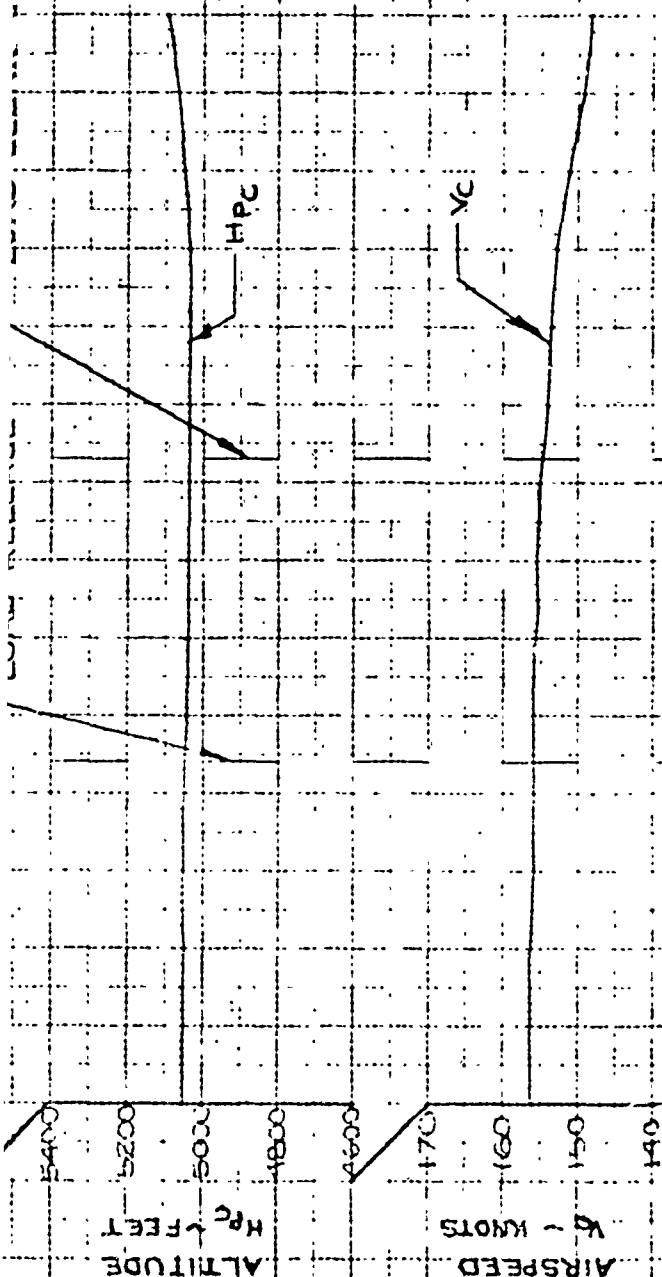
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F.S 780
VERT. ~ WL 182

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 25 FT.
3. RATED CHUTE FORCE/CARGO WT ~ 135
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D-29A



6008
REVISED ADS 95A
2-15-65
MBN

6008
ADS 95B

RIGHT ROLL
PUSH LEFT
PULL

-70

60

50

40

30

20

10

0

10

20

30

40

20

15

10

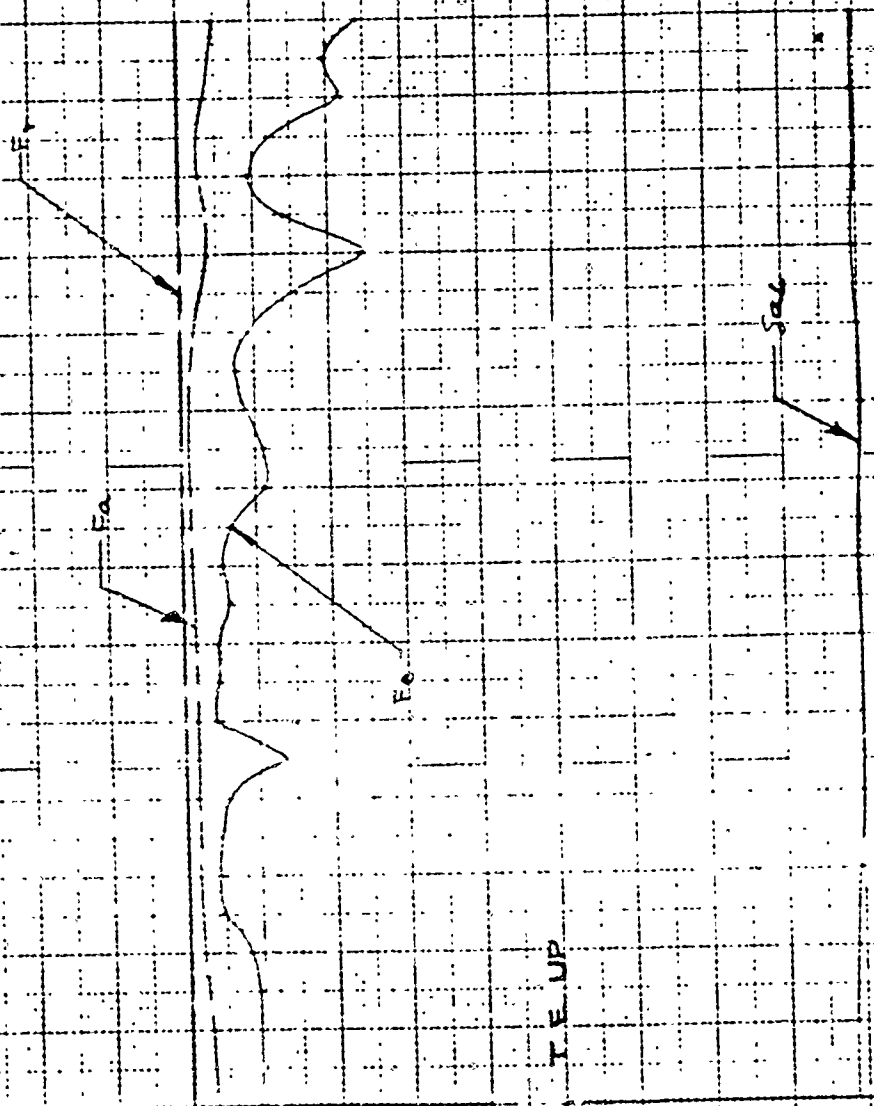
5

0

5

CONTROL FORCES ~ LBS.

TAILERON POSITION ~ DEG.



PREPARED BY FCW
DATE 6-7-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-181

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 6-7-65
FLIGHT 138 DROP NO 26
SHEET 2 OF 7
CARGO WT 35250 LBS

NOTE:
SEE FIGURE 25A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

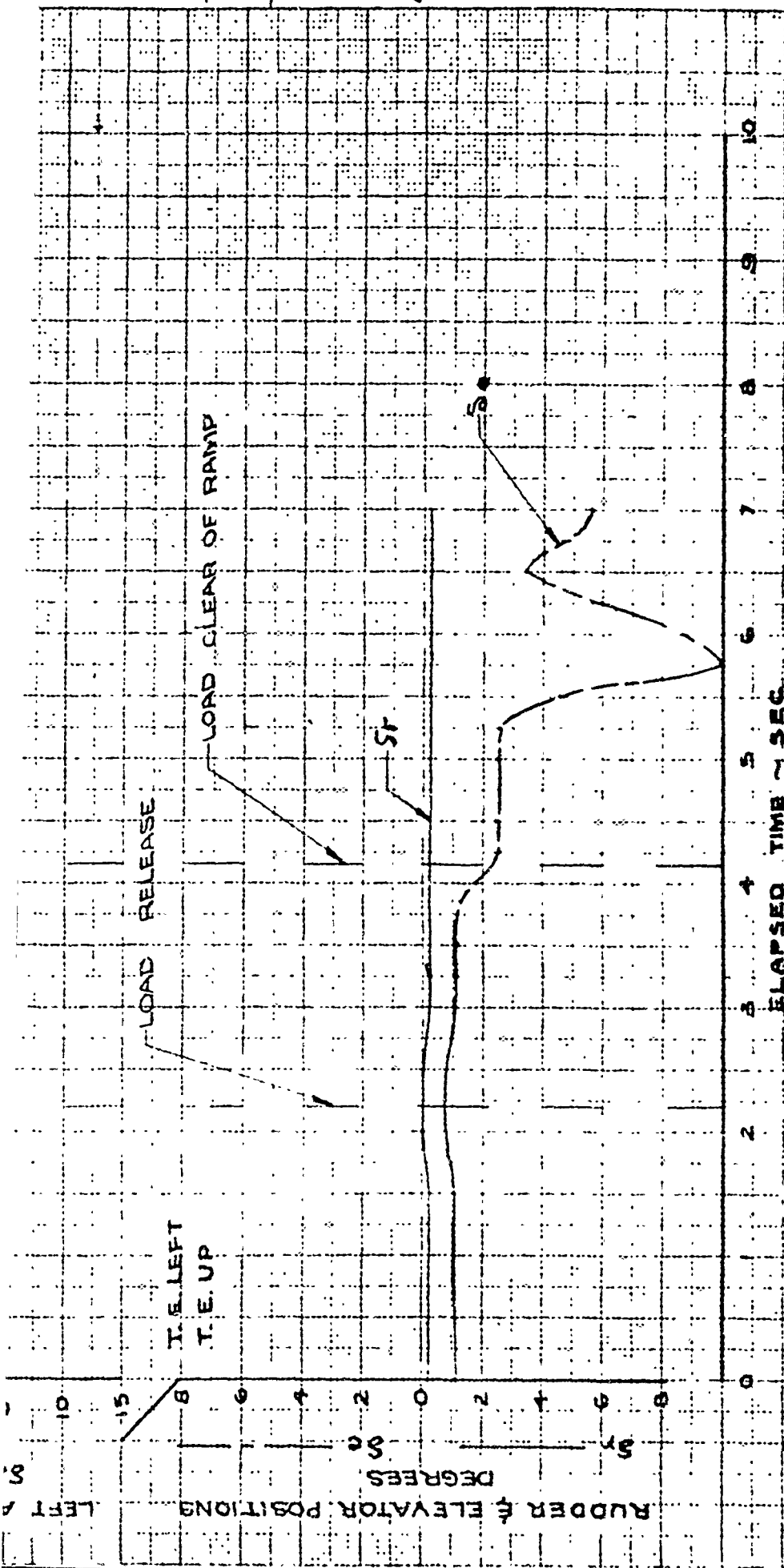
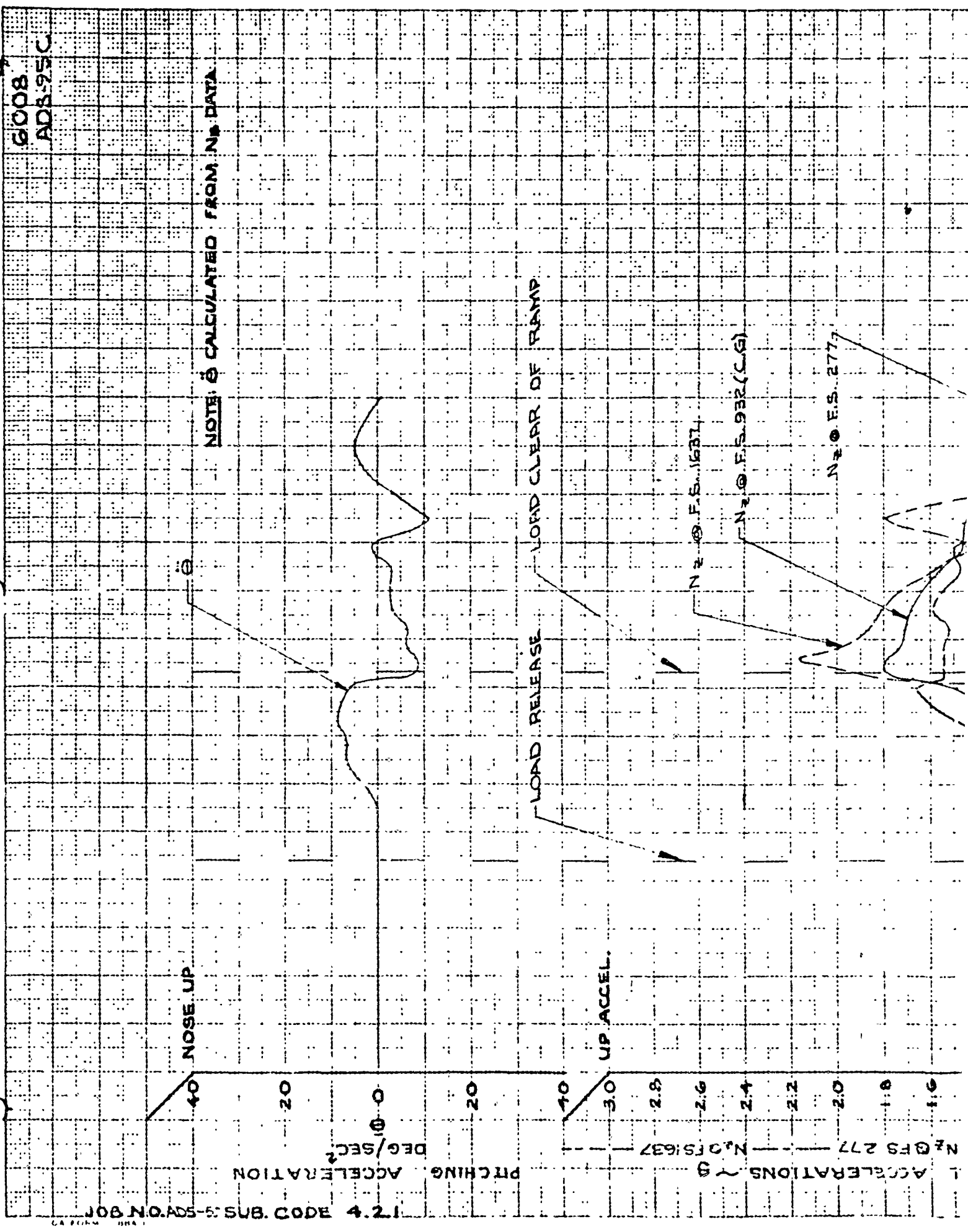


FIGURE C-29B

8008
ADG 65B

6008
ADB-95C

NOTE: θ CALCULATED FROM N_z DATA



PREPARED BY **TED**
DATE **6-7-65**
CHECKED BY **JWP**

LOCKHEED GEORGIA COMPANY
AERIAL DELIVERY AIRCRAFT DIVISION

REPORT NO. **ER 5473**
MODEL **C-141A**
FILE **D-182**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C141A**
AFG3-B077 LAC 6008
TEST DATE **6-7-65**
FLIGHT **~138** DROP NO **~25**

SHEET **3 OF 7**

CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE **229A** SHEET **1 OF 7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

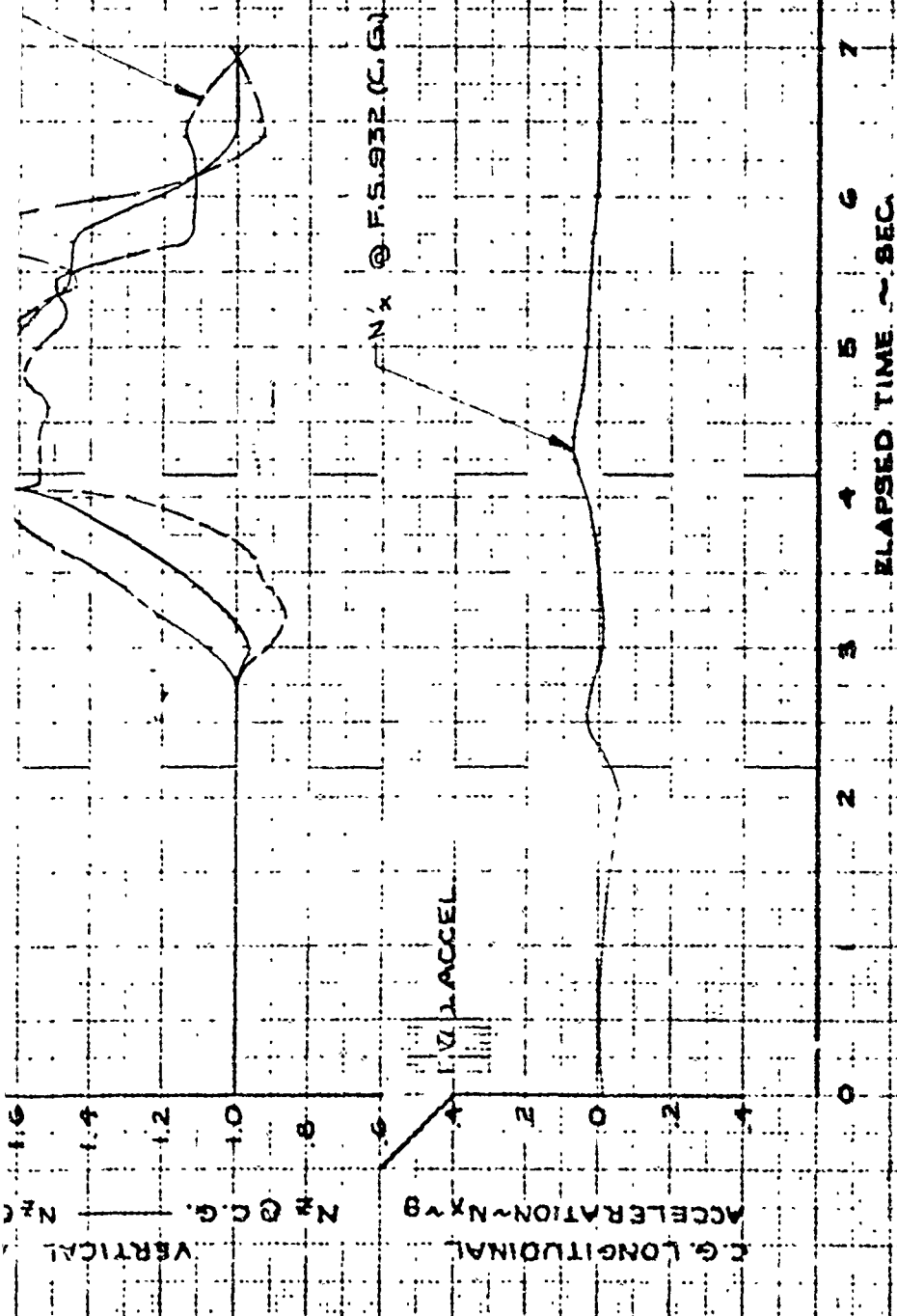
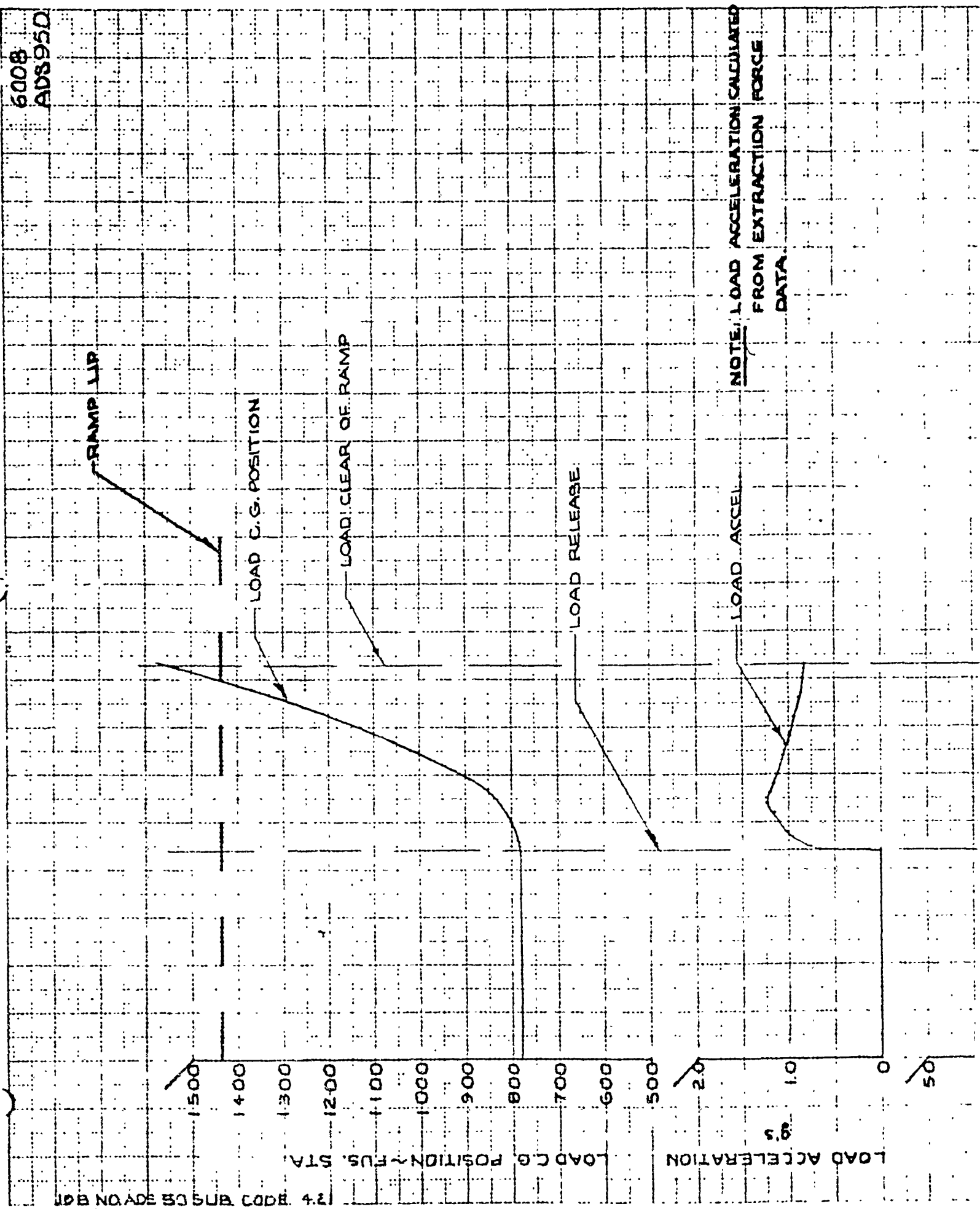


FIGURE **D-29C**

6008
ADS-95C

6008
AD895D

124 BDD3 BNSG EGVN BDR



PREPARED BY FCW
DATE 6-8-65
CHECKED BY JWP

LOCKHEED-GEORGIA COMPANY
AERONAUTICAL ENGINEERING

REPORT NO ER 5473
MODEL C-141A
PAGE D-183

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 6-7-65
FLIGHT ~ 138 DROP NO. 25

SHEET 4 OF 7

CARGO WT. 35250 LBS.

NOTE:
SEE FIGURE D-29A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

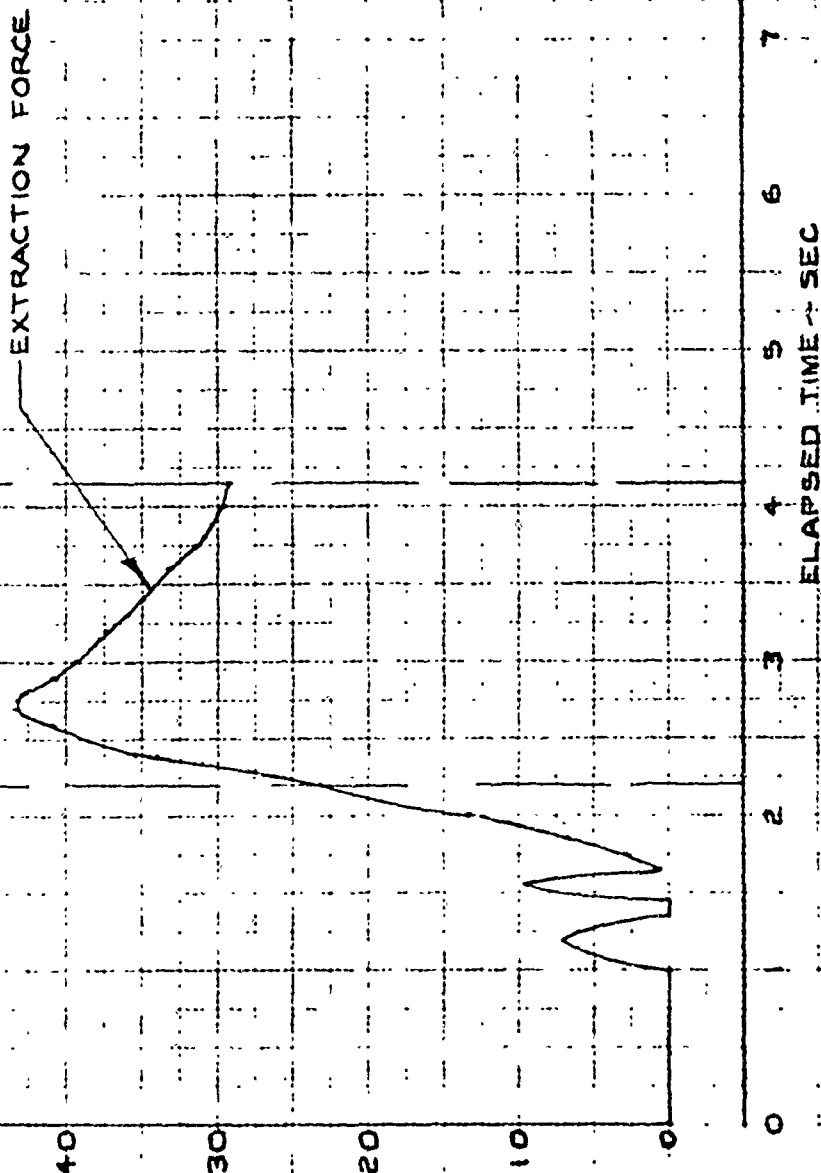
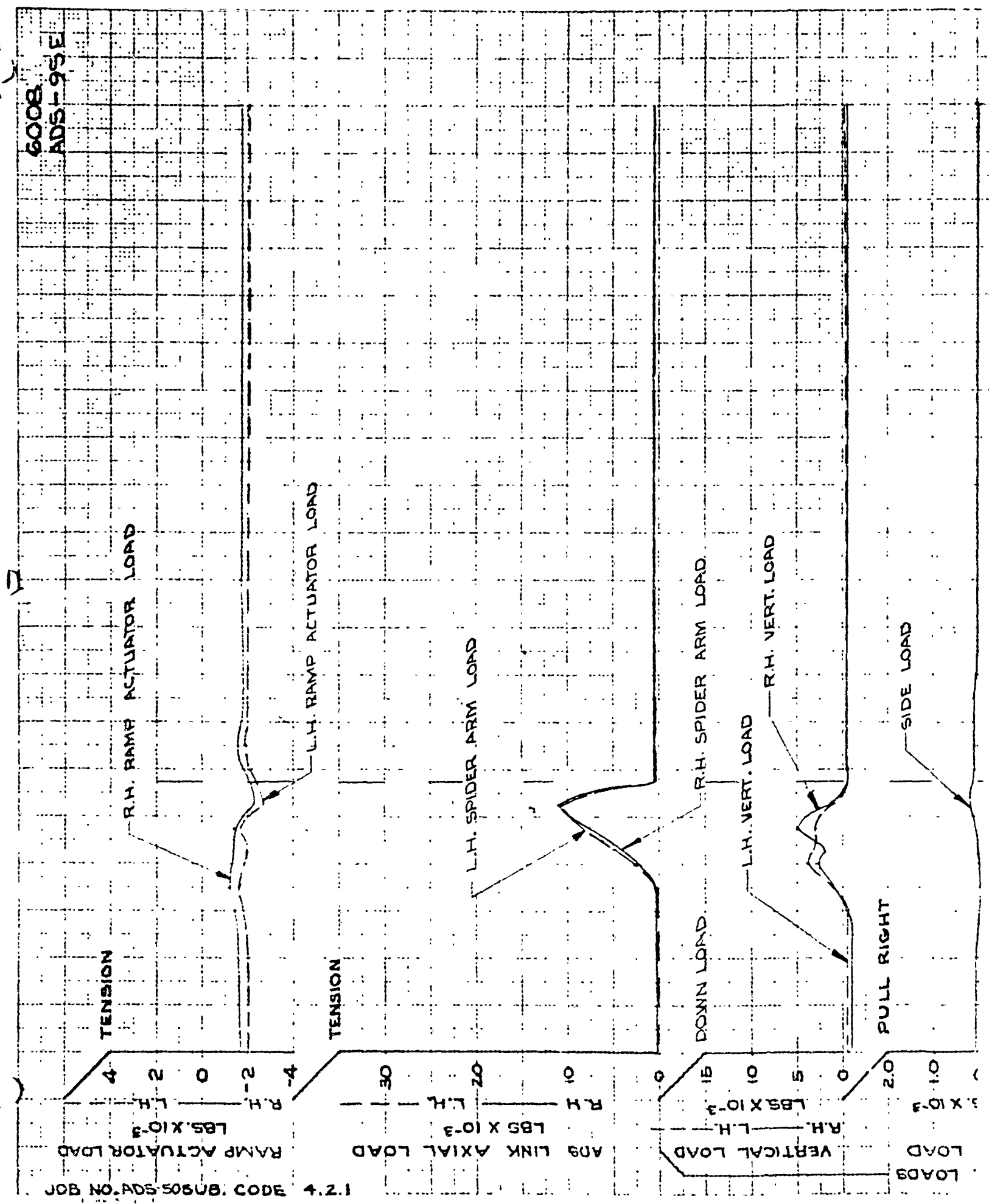


FIGURE D-29D

6008
ADS 950

6008
ADS-95E



JOB NO. ADS-505UB. CODE 4.2.1

PREPARED BY T.E.D.

DATE 6-8-65

juv

REPORT NO. ER 5473

MODEL C-141A

PAGE D-184

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 6-7-65

FLIGHT: 138

DROP NO: 25

SHEET 5 OF 7

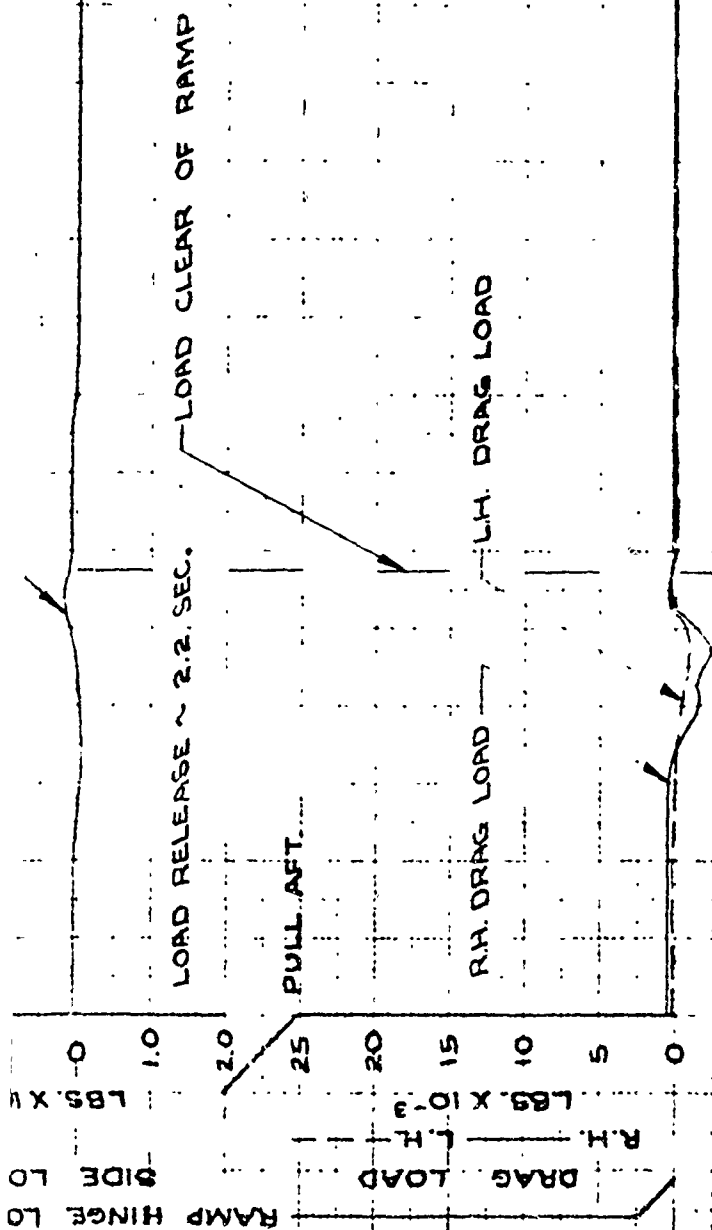
CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE D-29A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE D-29E

6008
ADS-95E





PREPARED BY T.E.D.
DATE 6-8-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-185

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 6-7-65

FLIGHT ~ 138

DROP NO ~ 25

SHEET 6 OF 7

CARGO WT. 35,250 LBS

NOTE:

SEE FIGURE D-23A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD CLEAR OF RAMP

LOAD RELEASE ~ 2.2 SEC

DOWN LOAD

FIGURE D-29F

6008
ADS-95F

VERTICAL BENDING ~ F.S. 1048
INCH-LBS. X 10⁻⁶

12 14 16 18 20 22 24 26 28



JOB NO. VSS 5005 CODE 4.2.1

UP LOAD

20

NET LOADS
SHEAR @ H. 44L ~ LB X 10⁻³

15

10

5

0

5

10

15

20

UP LOAD

2.0

BENDING @ HEL 44L ~ M'X

INCH - LB X 10⁻⁶

1.5

1.0

0.5

0

0.5

1.0

1.5

2.0

LOAD LEFT @ VS TIP

5

4

3

LOADS
M'X

LOAD CLEAR OF RAMP

M'X @ VSS 345

M'X @ HBL 44L

S₂ @ HBL 44L

6008
ADS-95C

PREPARED BY T.E.D.
DATE 6-8-65
CHECKED BY JWP

THE ENGINEERING COMPANY
A DIVISION OF LOCKHEED AIRCRAFT COMPANY

REPORT NO. ER 5473
MODEL G-141A
D-186

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL G-141A
AF63-B077 LAC 6008
TEST DATE: 6-7-65
FLIGHT ~ 138 DROP NO. ~ 25

SHEET 1 OF 1

CARGO WT. 35,250 LBS

NOTE:
SEE FIGURE D-296 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD RELEASE ~ 2.2 SEC.

Mx @ VSS 345

VERTICAL STABILIZER NET LOADING
BENDING @ VSS 345 ~ Mx
~ INCH-LBS X 10⁶

FIGURE D-296

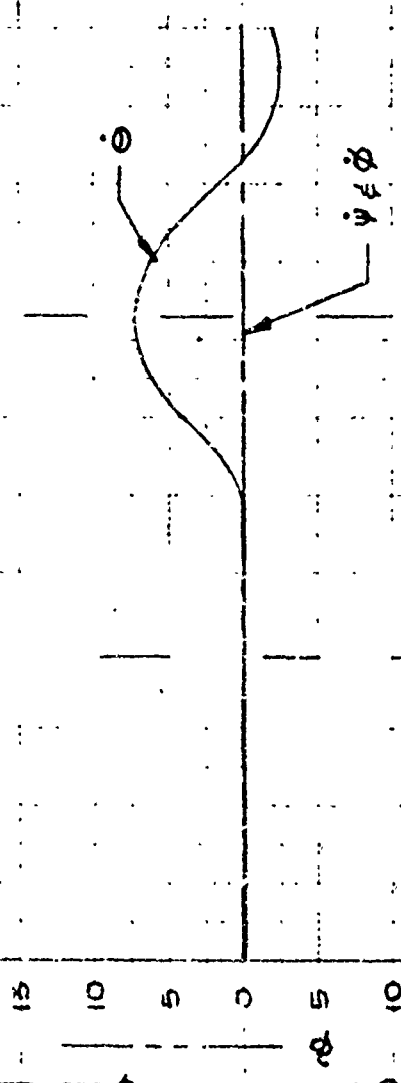
6008
ADS-95G



6008
ADSB2A

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ALTITUDE RATES ~ DEG/SEC.



NOSE UP
NOSE LEFT
RIGHT ROLL

RAFT ALTITUDES ~ DEG



DATE 5-20-63
 RSAE FLW
 HND

REPORT NO. ER 5473
 MODEL C-141A
 D-187

**TIME HISTORY OF AERIAL DELIVERY
 MANEUVER**

MODEL C-141A
 AF838077 LAC 6008
 TEST DATE 5-19-63
 FLIGHT-129 DROP NO. 26

SHEET 1 OF 4

CARGO WT. 23440 LBS

RUN CONDITIONS

1. G.W. ~ 182600 LBS.
2. C.G. PRIOR TO DROP ~ 19.5% MAC
3. C.G. AFTER DROP ~ 30.2% M.A.C.
4. FLAPS ~ 90%
5. GEAR ~ UP
6. AVG. EPR ~ 1.30 (4 ENGINES)
7. α ~ 5.5 DEG. (A/C NU)

CARGO DESCRIPTION

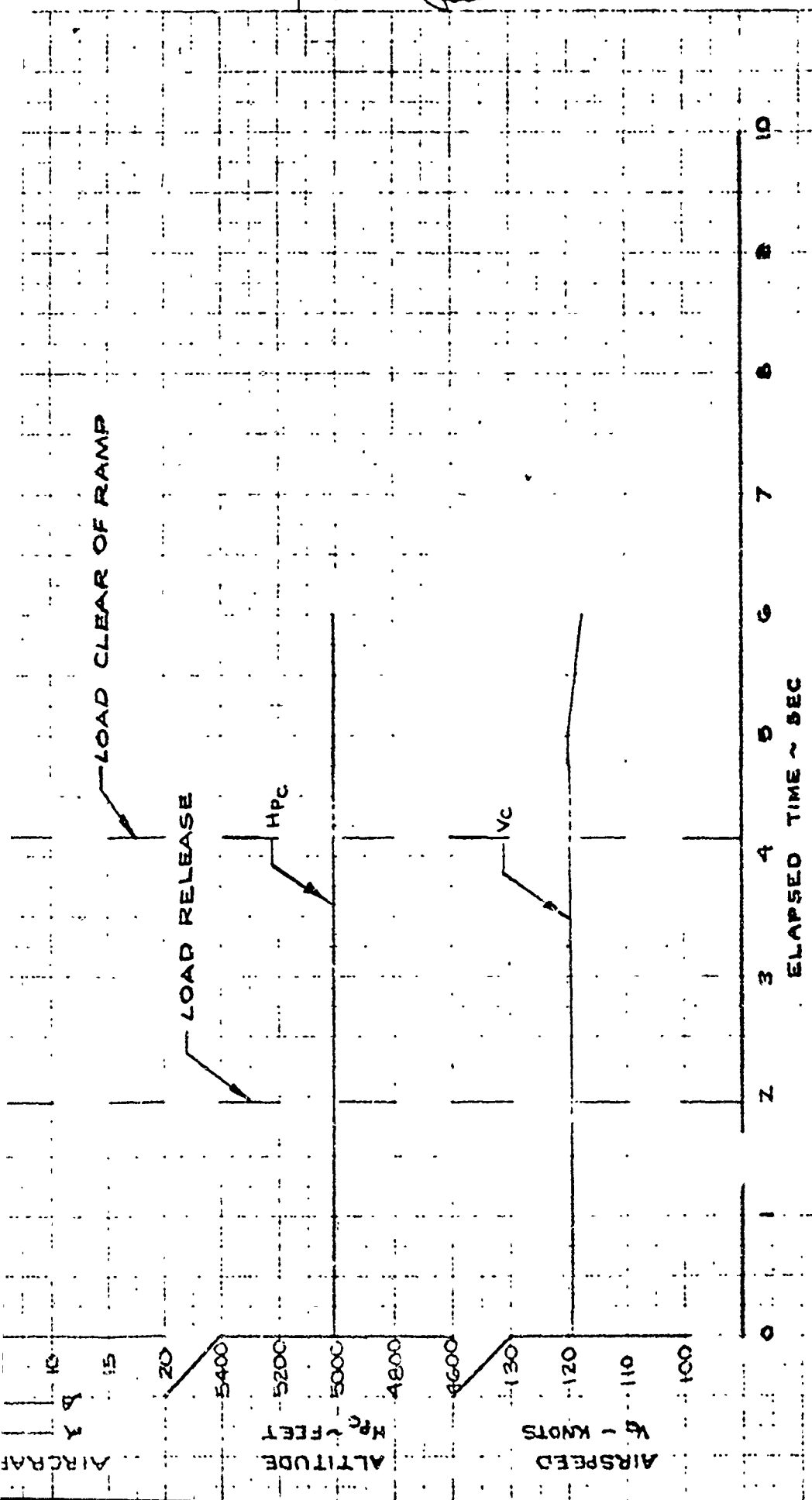
1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ PS 717
 VERT. ~ WL 183.

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28"
3. RATED CHUTE FORCE / CARGO WT. 118
4. EXTRACTION LINE LENGTH ~ 40 FT

NOTE: ALL DATA BETWEEN 4.1 AND 4.5 SEC. IS EXTRAPOLATED DUE TO AN INSTRUMENTATION POWER FAILURE.

FIGURE 2-30A



6008
ADS 328

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

T.E. UP

20

15

10

5

0

5

CONTROL FORCES ~ LBS.

T. AILERON POSITION ~ DEG.

F_r & F_a

F_e

δ_{al}

LOAD CLEAR OF RAMP

TESTER **RSA**
 DATE **5-19-65**
NEW

C-141A ER 5473
 MODEL C-141A
 D-186

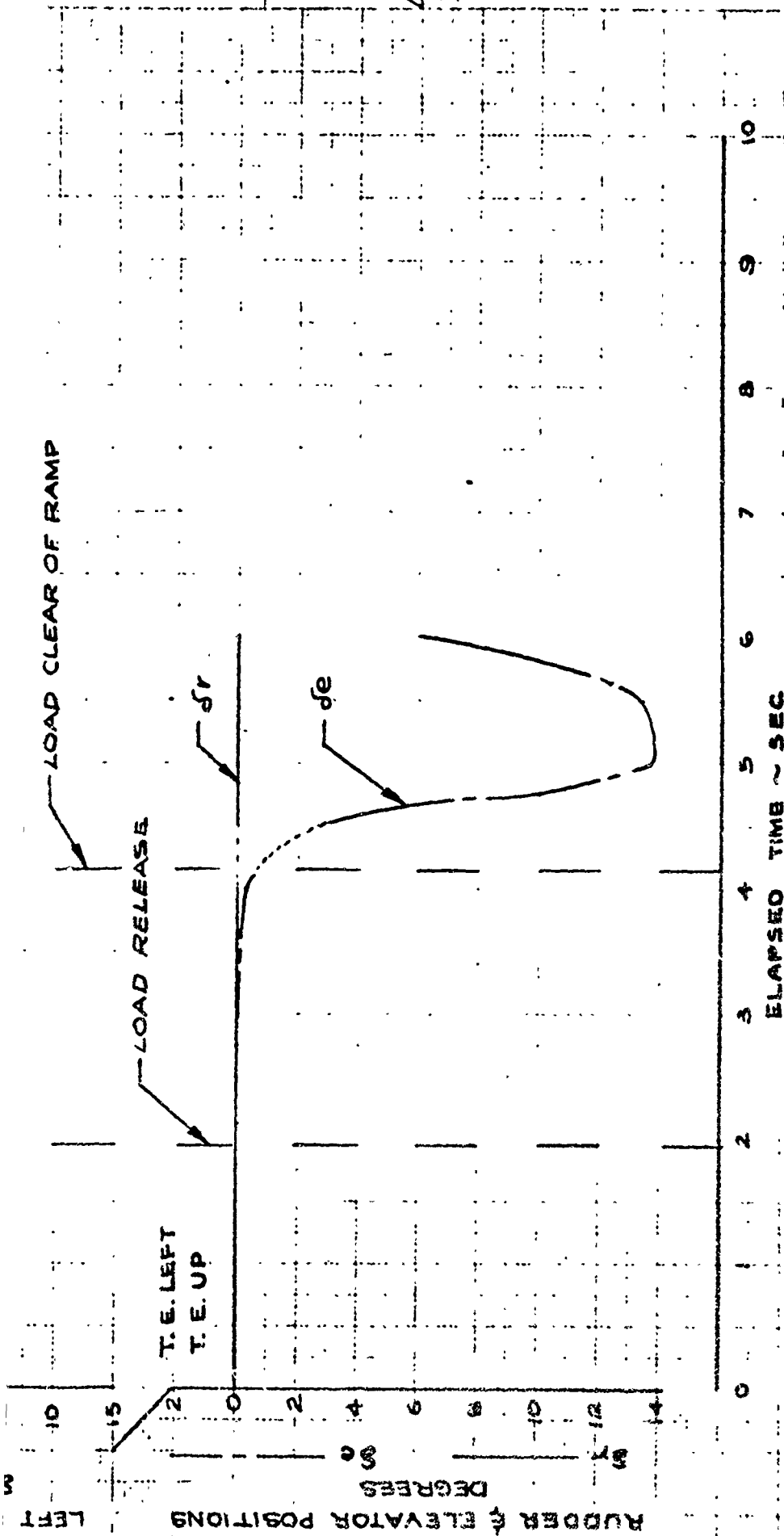
TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF 63 8077 LAC 6008
 TEST DATE ~ 5-18-65
 FLIGHT ~ 129 DROP NO ~ 26
 SHEET 2 OF 4
 CARGO WT 23440 LBS

NOTE:
 SEE FIGURE D.30A SHEET 1 OF 4
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1
 AND 4.5 SEC. IS EXTRAPOLATED
 DUE TO AN INSTRUMENTATION
 POWER FAILURE.

FIGURE D.30B



6008
ADS-82C

NOTE: θ CALCULATED FROM N_z DATA

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

JOB NO. ADS-455 SUB. CODE 4.2.1

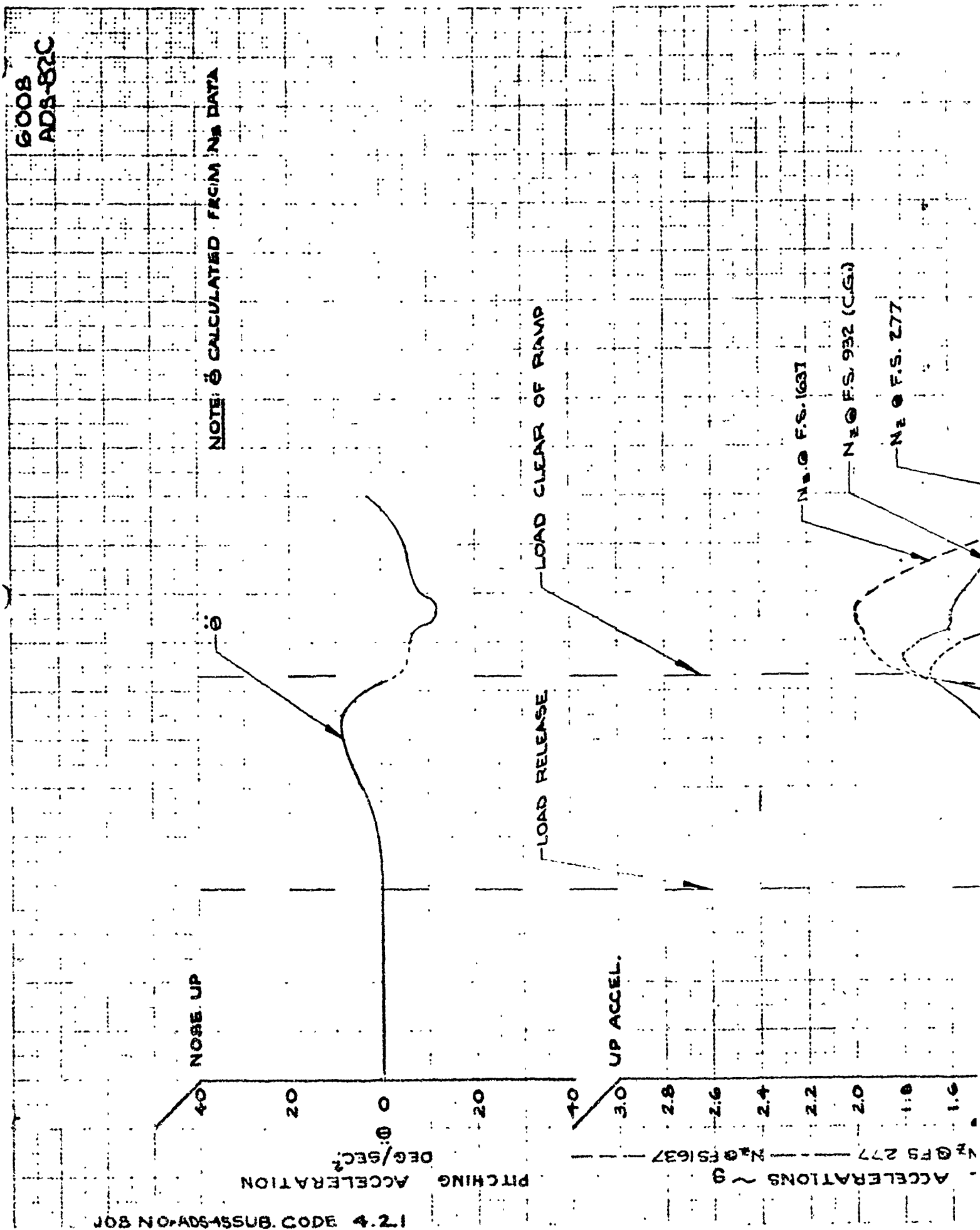
LOAD RELEASE

LOAD CLEAR OF RAMP

UP ACCEL.

ACCELERATIONS ~ g
N_z @ FS 277
N_z @ FS 1637

N_z @ F.S. 1637
N_z @ F.S. 932 (CG)
N_z @ F.S. 277



T.E.D.
3-20-68
JED

ER 5473
C-141A
D-189

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-8077

LAC 6008

TEST DATE: 8-19-68

FLIGHT-129

DROP NO. 26

SHEET 3 OF 4

CARGO WT. 23,440 LBS

NOTE:

SEE FIGURE D30C SHEET 1 OF 4
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1 AND
4.5 SEC. IS EXTRAPOLATED DUE TO
AN INSTRUMENTATION POWER
FAILURE.

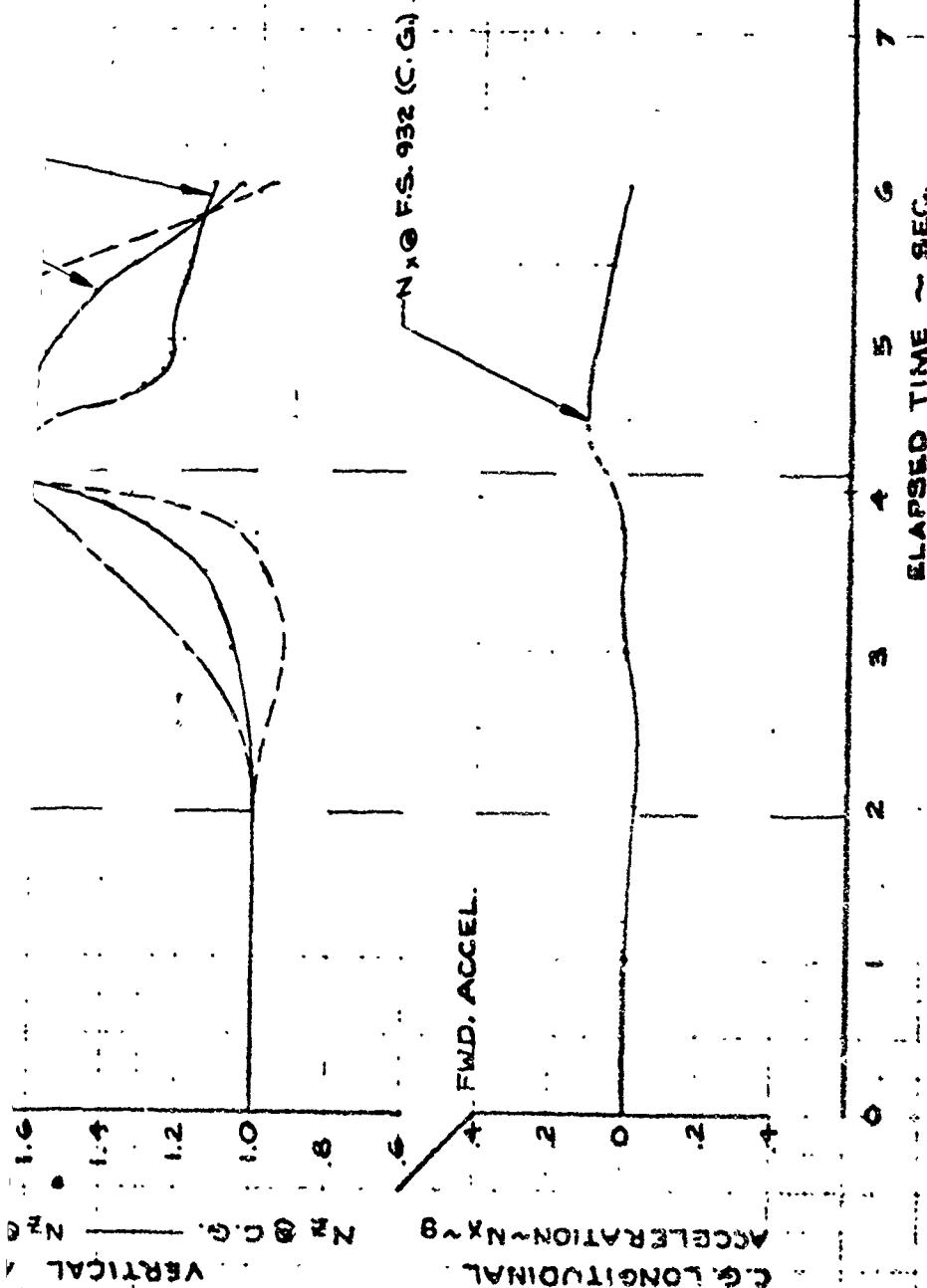


FIGURE D30C

6008
ADS-82C

6008
ADSBZD

124 2003 BNS 54 ON B01

RAMP LIP

LOAD CG POSITION

LOAD ACCEL.

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.

LOAD ACCELERATION g's

LOAD CG POSITION - FUS. STA.

1500 1400 1300 1200 1100 1000 900 800 700 600 500

2.0 1.0 0 50

PREPARED BY **RSA**
DATE **5-20-65**
CHECKED BY **JKE**

LOCKHEED CORP. COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
MODEL **C-141A**
PART **D-190**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF 67-8077 LAC 6008
TEST DATE **5-19-65**
FLIGHT **~129** DROP NO. **~26**

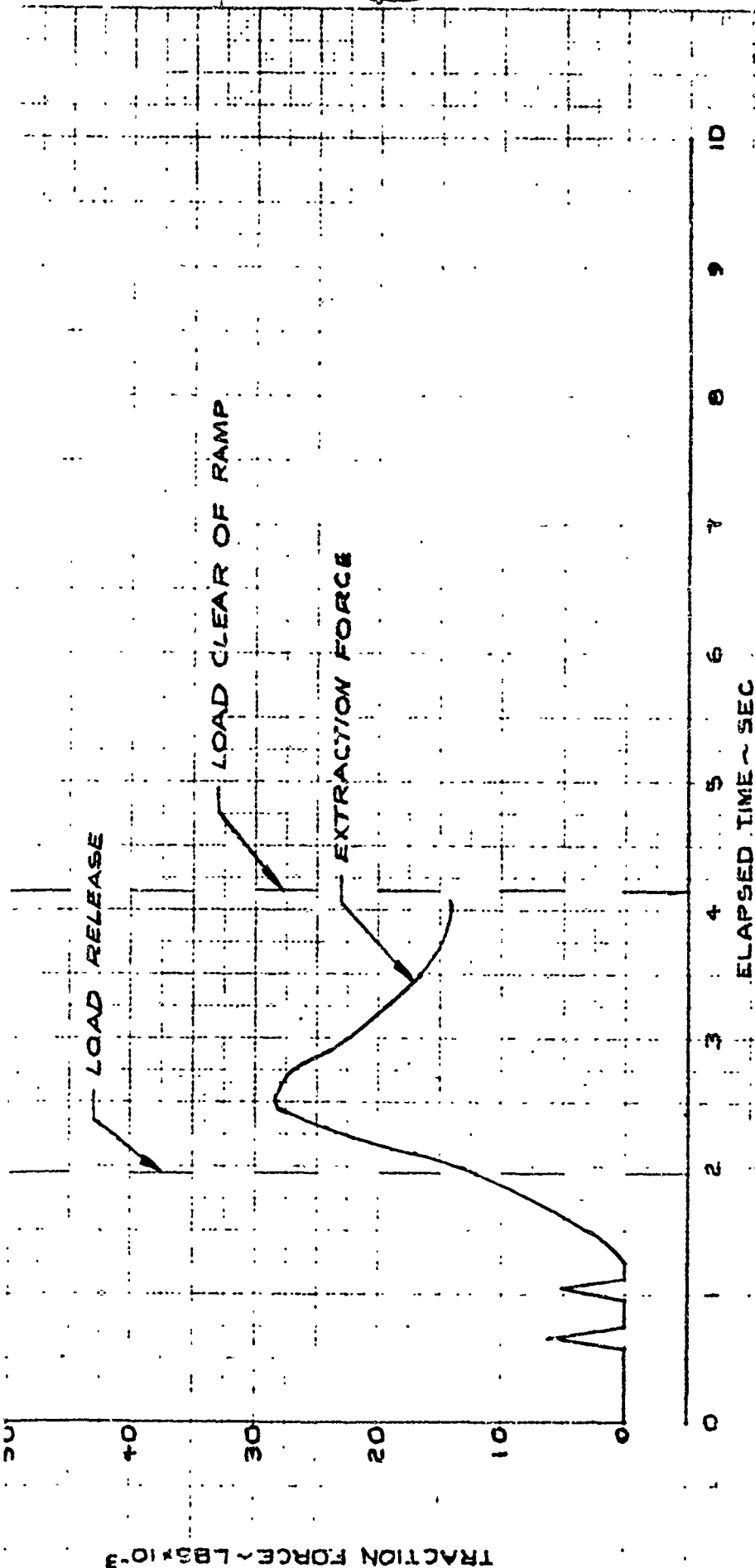
SHEET **4** OF **4**

CARGO WT. 23440 LBS

NOTE:
SEE FIGURE **D-30A**, SHEET **1** OF **4**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

NOTE: ALL DATA BETWEEN 4.1
AND 4.5 SEC. IS EXTRAPOLATED
DUE TO INSTRUMENTATION
POWER FAILURE.

FIGURE **D-30D**



TRACTION FORCE $\sim \text{LBS} \times 10^{-3}$

6008
ADS 22 D

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP.	PERM.
Checked			TITLE			D-191
Approved					Model C-141A	Report No. ER 9473

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077

LAC 6008

FLIGHT 129

TEST DATE: 5-19-65

G.W. 182,600 LBS. A/S 120.5 KCAS

C.G. 19.5 %MAC ALT. ~ 5,020 FT.

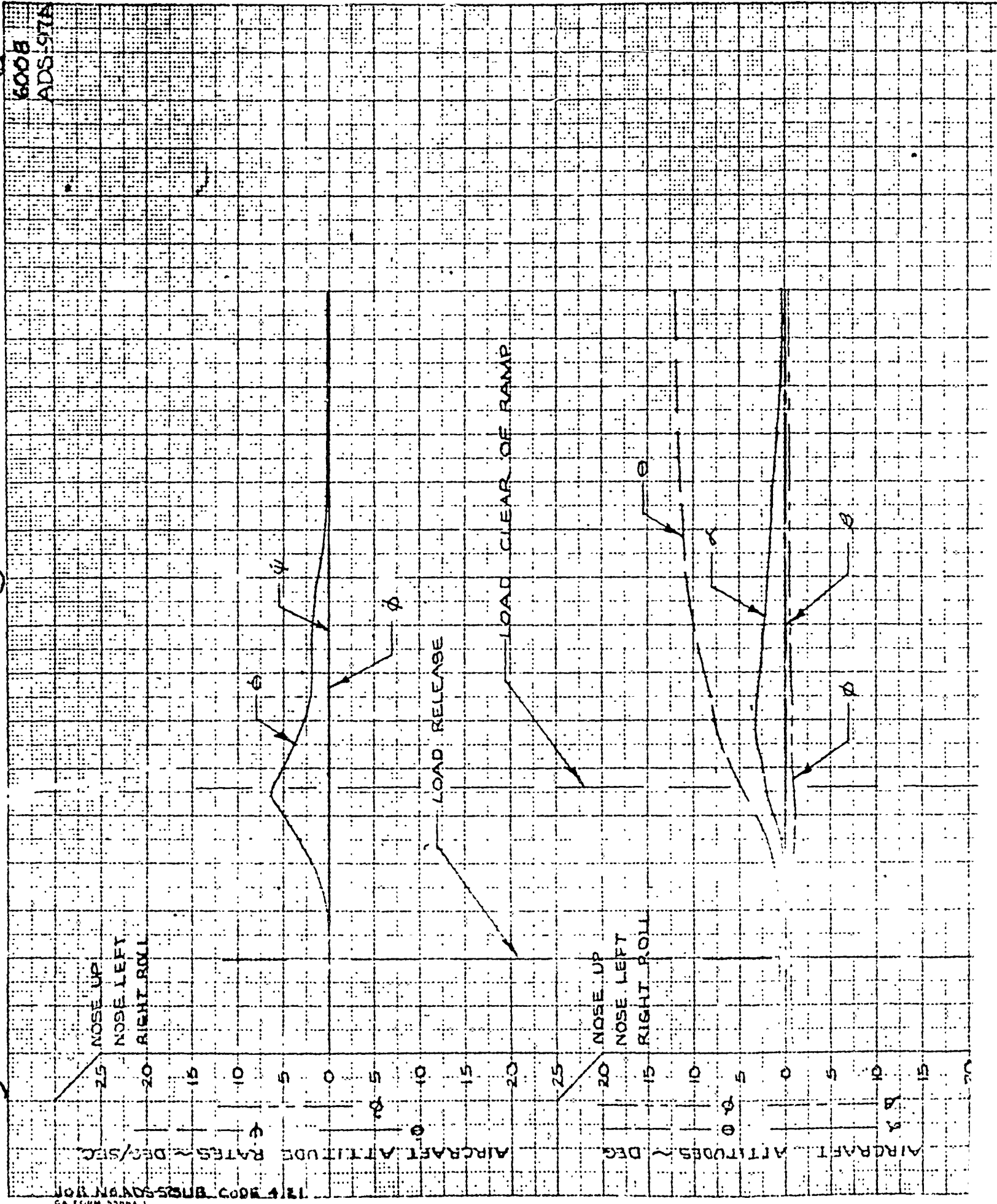
DROP VIT. ~ 23,440 LBS.

* PEAK LOAD MEASUREMENTS NOT AVAILABLE DUE TO INST. POWER FAILURE

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	5.8
2	ANGLE OF PITCH	"	11.3
*3	C.G. VERT. ACCEL.	g's	1.80 (ESTIMATED)
*4	C.G. LONG. ACCEL.	"	0.12
*5	VERT. ACCEL. @ F.S. 277	"	1.680
*6	VERT. ACCEL. @ F.S. 1637	"	2.000
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	18.4
8	VERT. BEND. @ F.S. 1568	"	1.36
9	BENDING ~ M'x @ HBL 44L	"	0.80
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	0.61
11	PITCH TRIM ACTUATOR ~ S'z	"	- 5.80
12	R.H. RAMP ACTUATOR LOAD	"	- 2.37
13	L.H. " " " "	"	- 2.01
14	R.H. SPIDER ARM LOAD	"	5.50
15	L.H. " " " "	"	5.00
*16	R.H. PETAL DOOR ACTUATOR LOAD	"	N.A.
*17	L.H. " " " "	"	N.A.
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁵	3.60
20	L.H. " " " "	"	2.95
21	R.H. RAMP HINGE DRAG LOAD	"	- 1.82
22	L.H. " " " "	"	- 0.53
*23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	28.40
25	CARGO LONG. ACCEL.	g's	1.20

FIG. D-30E
ADS-82E

6008
ADS-97A



NO. NAADS-53 SUB CODE 4.21
CA FORM 1000A

PREPARED BY: FCW
DATE: 6-15-65
CHECKED BY: JWF

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL: C-141A
PAGE: D-192

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF38077 LAC 6008

TEST DATE 6-15-65

FLIGHT ~ 141 DROP NO. ~ 21

SHEET 1 OF 7

CARGO WT. 23,750 LBS

RUN CONDITIONS

1. G. W. ~ 187,200 LBS.
2. C. G. PRIOR TO DROP ~ 16.7% MAC
3. C. G. AFTER DROP ~ 29.1% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.24 (4 ENGINES)
7. α ~ 2.55 DEG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 ~ 717
VERT. ~ WL ~ 185

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 32 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 132
4. EXTRACTION LINE LENGTH ~ 140 FT.

FIGURE F-31A

ALTITUDE
HPC ~ FEET

AIR SPEED
VC ~ KNOTS

ELAPSED TIME ~ SEC

6008

ADS-91A

REVISED 12-15-65
MBH

6008
ADS-91B

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

50

60

70

CONTROL FORCES ~ LBS

JOB NO. ADS-52 SUB. CODE 4.21

F_x
 F_y
 F_z

LOAD RELEASE

T.E. UP

LOAD CLEAR OF RAMP

F_{ax}

IRON POSITION ~ DEG

PREPARED BY FCW
DATE 6-15-65
CHECKED BY JWP

LOCKHEED ENGINE COMPANY
AERONAUTICAL ENGINEERING DIVISION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-193

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 6-14-65
FLIGHT ~141 DROP NO ~21
SHEET 2 OF 7
CARGO WT 23,750 LBS

NOTE:
SEE FIGURE 3 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

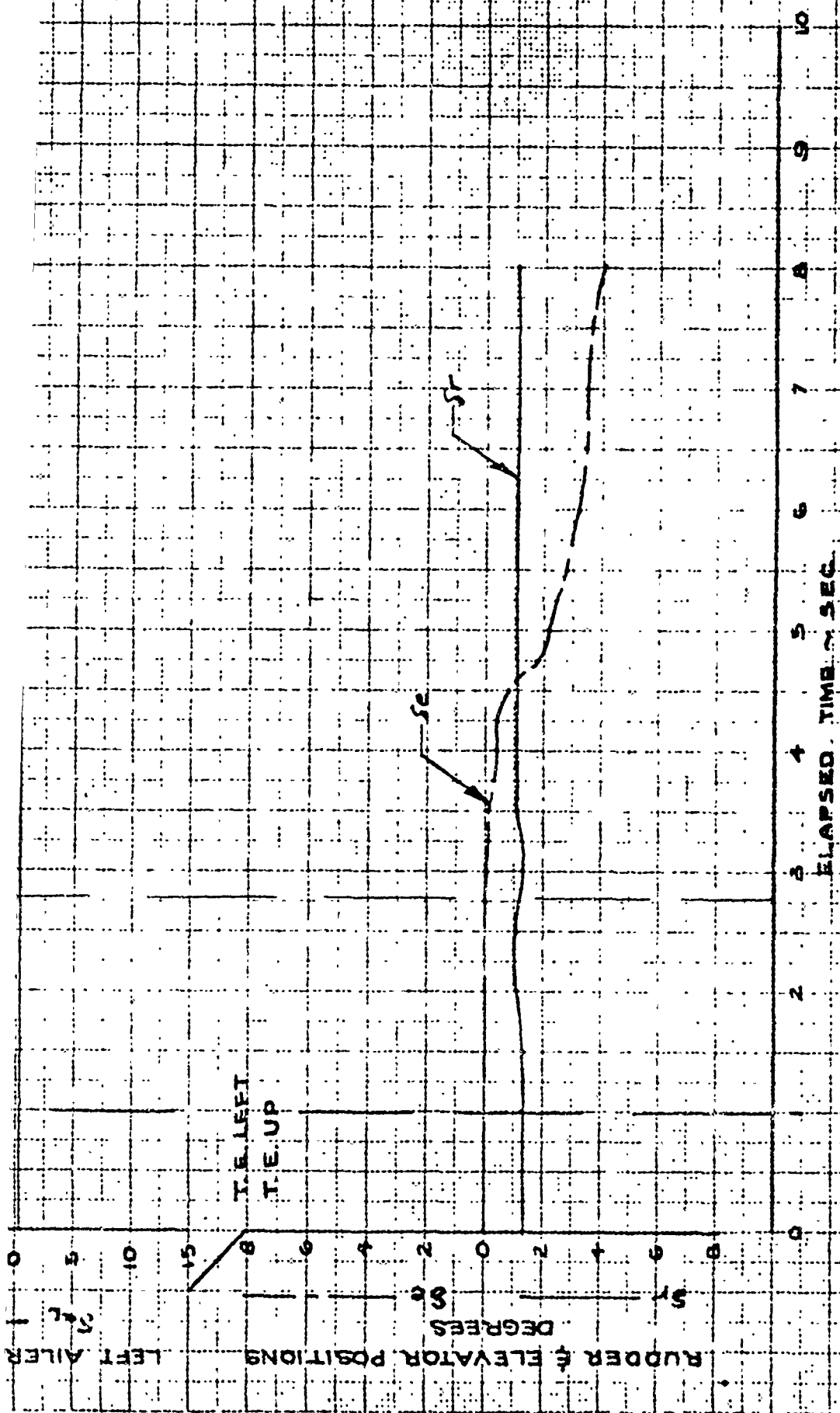


FIGURE D-3 B

6008
ADS-67B

6008
AD8-97C

NOTE: ϕ CALCULATED FROM N_z DATA

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

JOB NO. ADS-52 SUB. CODE 4.2.1

UP ACCEL

ACCELERATIONS ~ g
N₁ FS 1637
N₂ FS 277

LOAD RELEASE

LOAD CLEAR OF RAMP

N₁ FS 1631

N₂ FS 932 (C.G.)

N₂ FS 277

PREPARED BY TED

DATE 6-13-69

CHECKED BY JWP

LOCKHEED GEORGIA 2 IMPAN

AIR FORCE TEST CENTER AIR FORCE 277

REPORT NO. ER 5475

MODEL C-141A

PAGE 1-194

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-8077 LAC 6008

TEST DATE 6-14-69

FLIGHT 141 DROP NO. 27

SHEET 3 OF 7

CARGO WT 23750 LBS

NOTE:
SEE FIGURE D31C SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

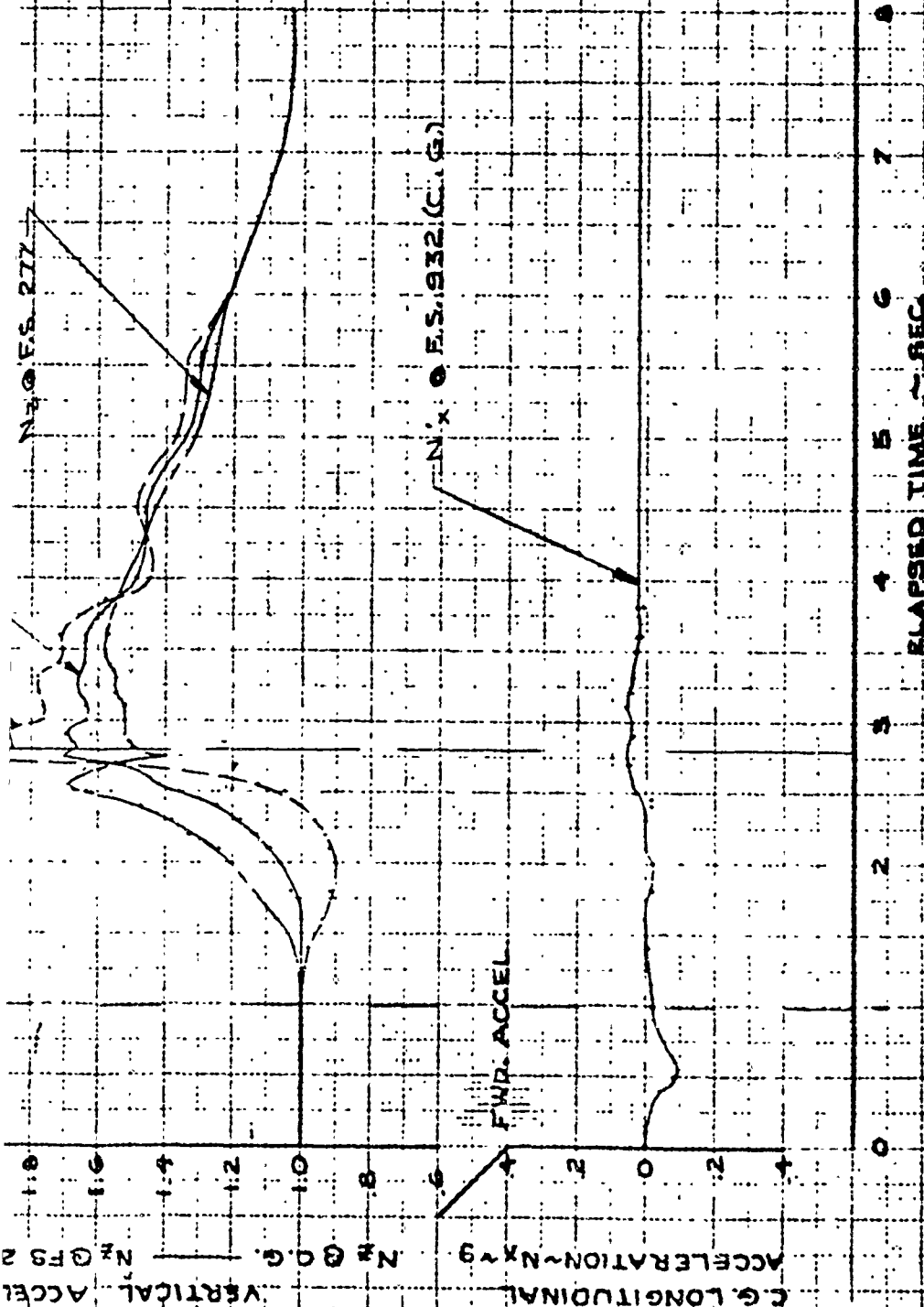
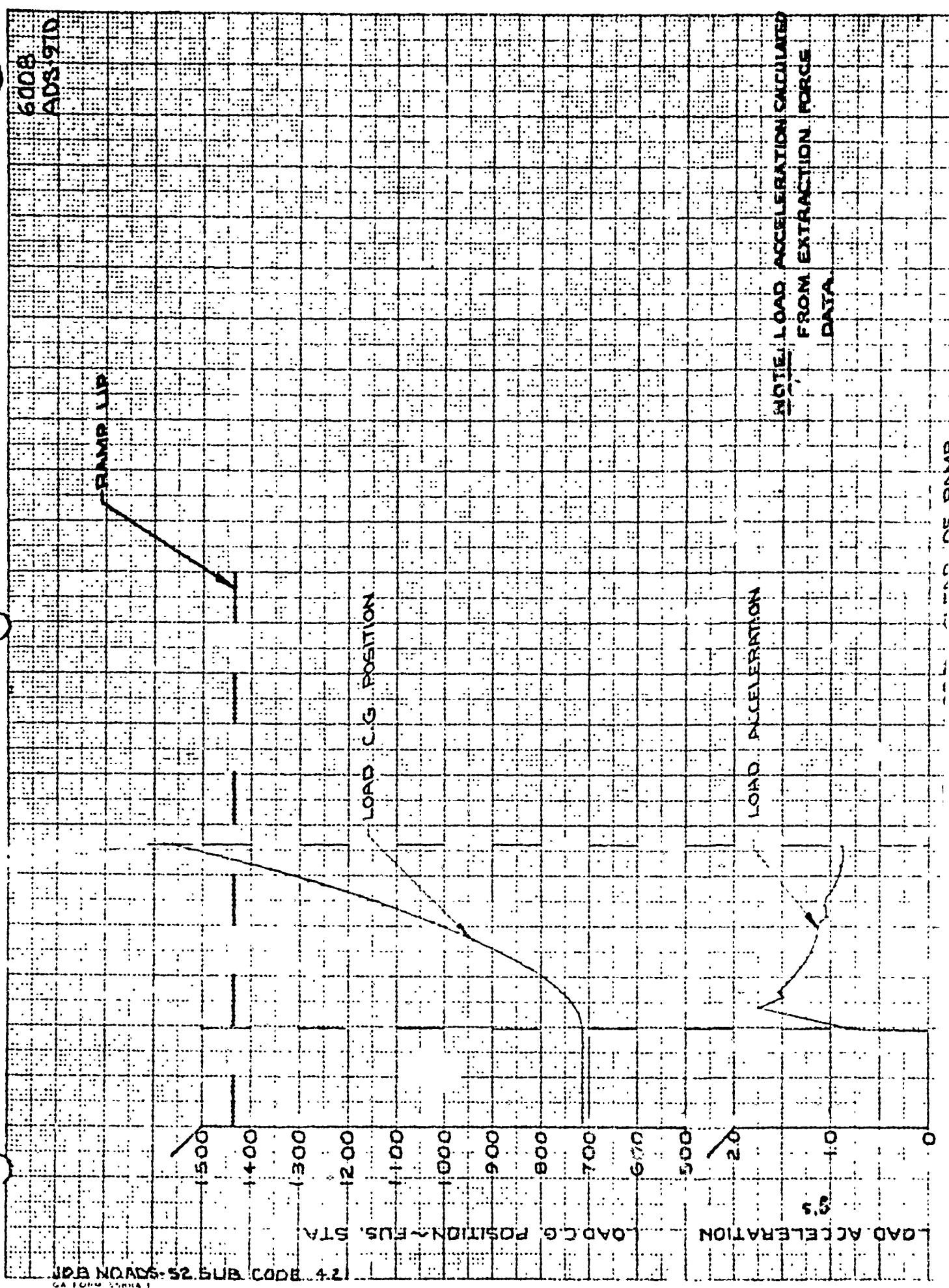


FIGURE D31C

6008
ADS-97C



PREPARED BY TED

DATE 6-12-68

CHECKED BY JWS

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-195

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 6-12-68

FLIGHT ~14

DROP NO. 23

SHEET 4 OF 7

CARGO WT. 23,750 LBS.

NOTE:

SEE FIGURE 3, SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

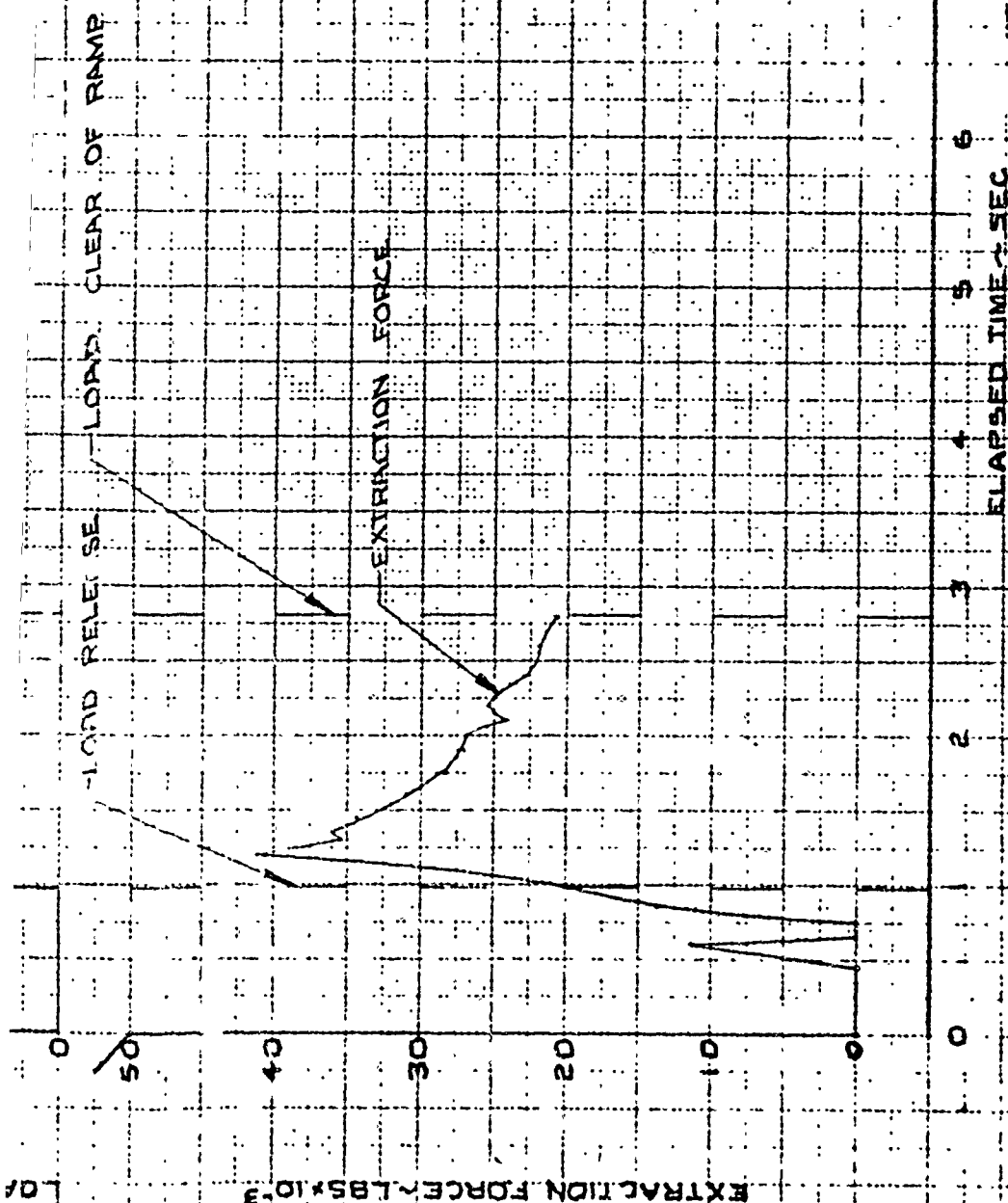
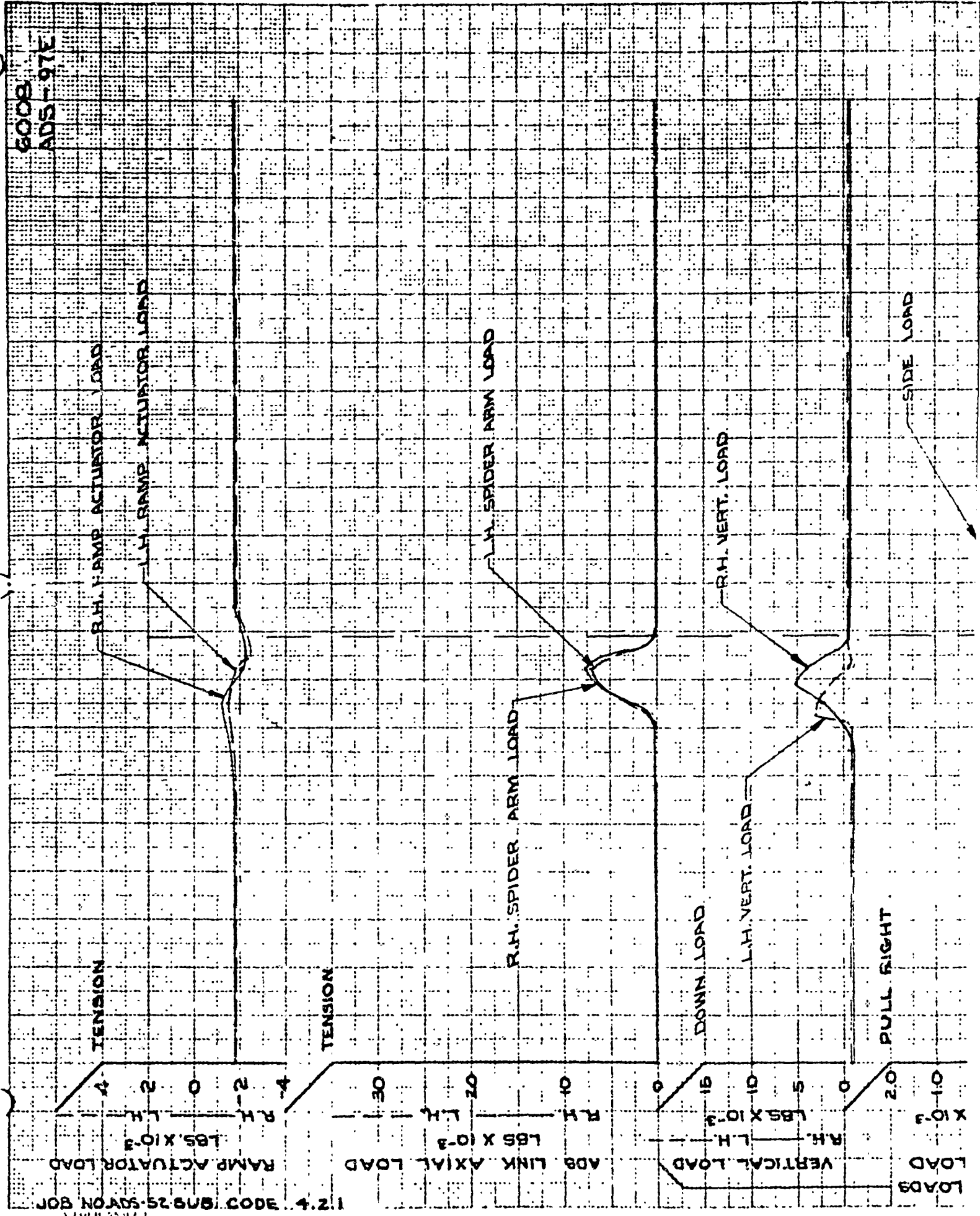


FIGURE D-312

6008
ADS-97D

6008
ADS-97E



PREPARED BY **TED**
 DATE **6-13-63**
 CHECKED BY **JUP**

FOOTNOTED GELING A COMPANY
 A DIVISION OF THE GELING A COMPANY

REPORT NO. **ER 5473**
 MODEL **C-242A**
 PAGE **D-196**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
 AF 63-8077 LAC 6008
 TEST DATE: **6-14-63**
 FLIGHT ~ 141 DROP NO. ~ 21

SHEET **5** OF **7**

CARGO W.T. **23,750 LBS**

NOTE:
 SEE FIGURE D-31A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

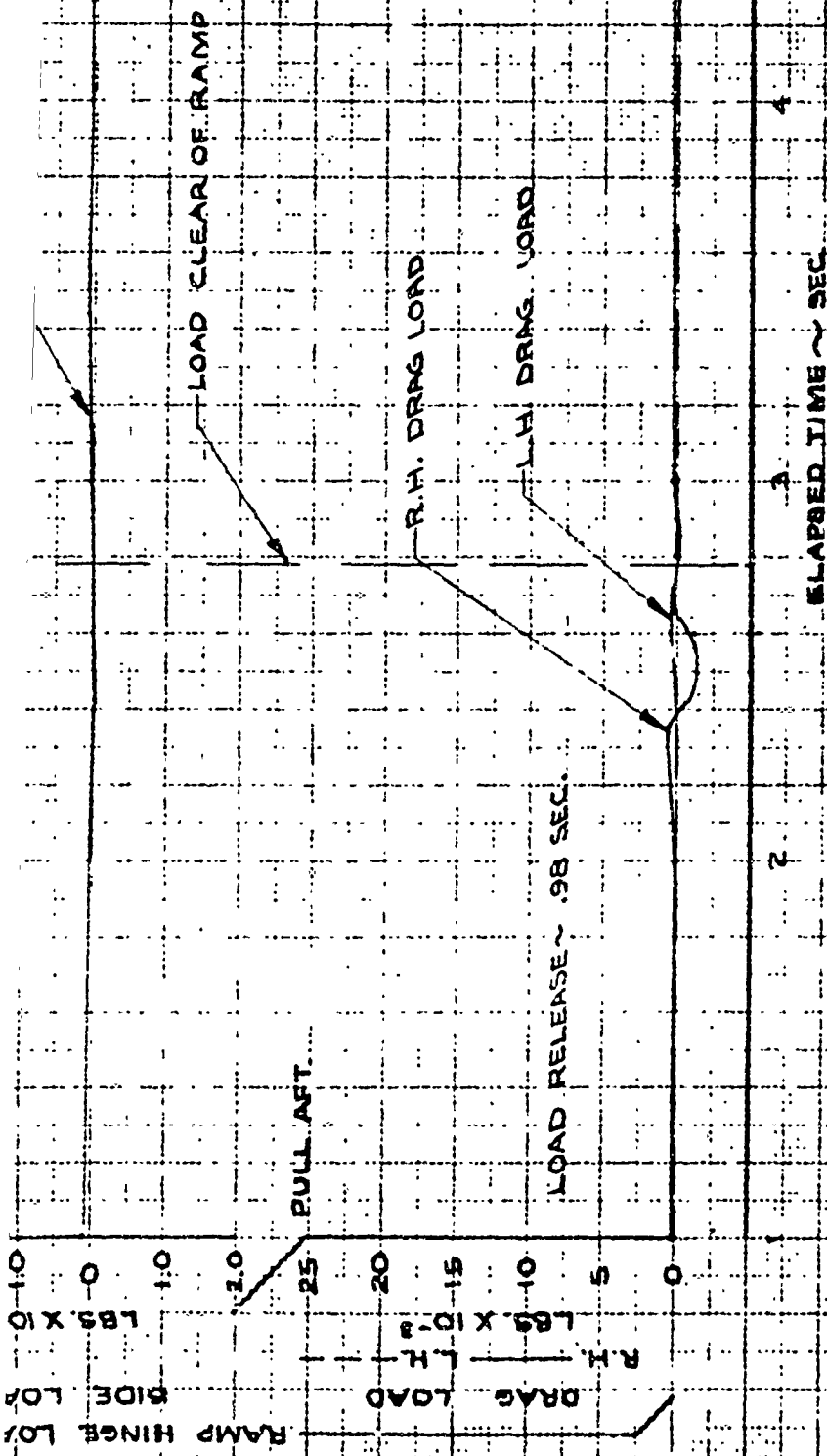


FIGURE D-31E

6008
 ADS-97E

6008
LH PETAL DOOR ACTUATOR LOAD ADS-9TF

RH PETAL DOOR ACTUATOR LOAD

LOAD CLEAR OF RAMP

My @ F.S. 1568

My @ F.S. 1048

COMPRESSION

DOWN LOAD

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10⁻³

VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶

PREPARED BY: **TED.**
DATE: **6-15-69**
CHECKED BY: **JMP**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
MODEL: **C-141A**
PAGE: **D-197**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AFG3-2077 LAC 6008
TEST DATE: **6-14-69**
FLIGHT-141 DROP NO-27

SHEET **6** OF **7**

CARGO WT. **23,750 LBS**

NOTE:
SEE FIGURE D-31A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

LOAD RELEASE ~ .98 SEC.

DOWN LOAD

ELAPSED TIME ~ SEC.

FIGURE D-31F

VERTICAL BENDING ~ FS. 1048
INCH-LBS. X 10⁻⁶

6008
ADS-97F

6008
AL-91G

UP LOAD

20
15
10
5
0
5
10
15
20

SHEAR @ HBL 44L ~ B'_N

LBS X 10^{-3}

HORIZONTAL STABILIZER NET LOADS

JOB NO. ADS-528UB. CODE 4.2.1

UP LOAD

20
15
10
5
0
5
10
15
20

BENDING @ HBL 44L ~ M'_X

INCH - LBS X 10^{-6}

LOAD CLEAR OF RAMP

PREPARED BY T.E.D.
DATE 6-19-65
REVISION 1

ENGINE OF R. A. L. M. P. S.
A. D. L. E. N. O. F. L. O. C. K. H. E. E. T. A. R. D. I. T. Y. E. G. E. N. E. R. A. T. I. O. N.

REPORT NO. ER 5473
MODEL C-141A
PAGE D-198

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 6-14-65
FLIGHT ~161 DROP NO. ~23

SHEET 1 OF 1

CARGO WT. 23,750 LBS

NOTE:
SEE FIGURE D-31A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

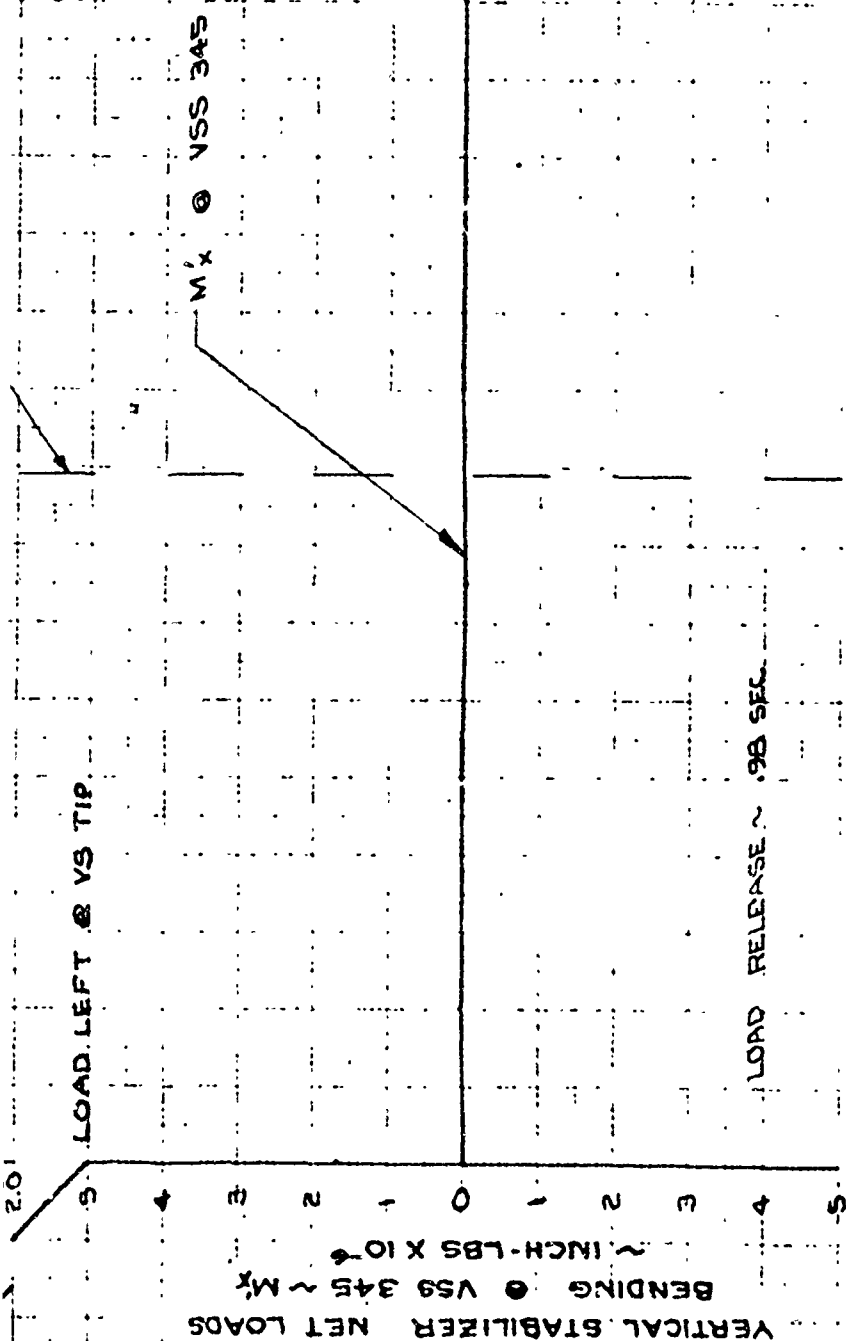


FIGURE D-31G

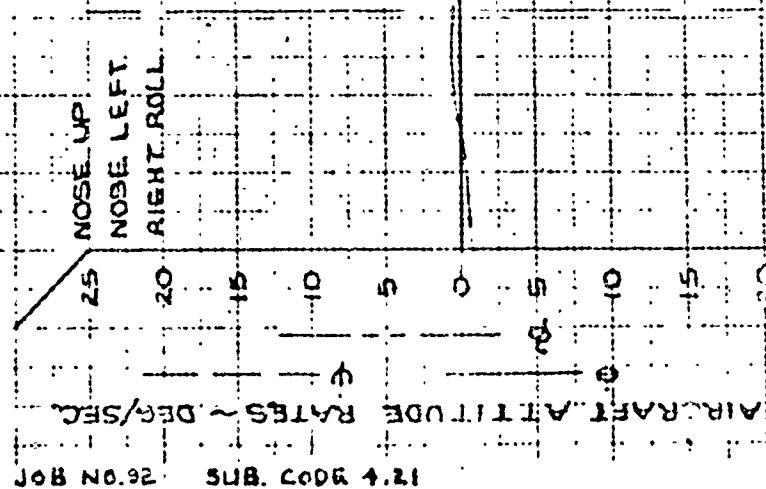
6008
ADS-97G

(1)

(2)

(3)

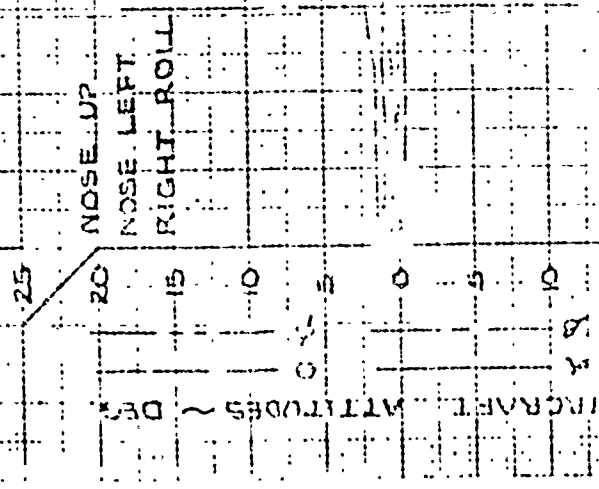
6003
ADS 177A



ϕ

$\dot{\phi}$

$\ddot{\phi}$



ϕ

$\dot{\phi}$

$\ddot{\phi}$

PREPARED BY JDG

DATE 10-1-65

CHECKED BY JWR

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5475

MODEL C-141A

PAGE D-199

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 6008

TEST DATE 9-30-64

FLIGHT 188

DROP NO. 28

SHEET 1 OF 7

CARGO WT. 34,700 LB

RUN CONDITIONS

1. G.W. ~ 256,200 LBS.
2. C.G. PRIOR TO DROP ~ 29.9% MAC
3. C.G. AFTER DROP ~ 31.5% MAC
4. FLAPS ~ 35%
5. GEAR ~ UP
6. AVG. EPR ~ 1.31
7. α ~ 0.9° (A/C NULL)

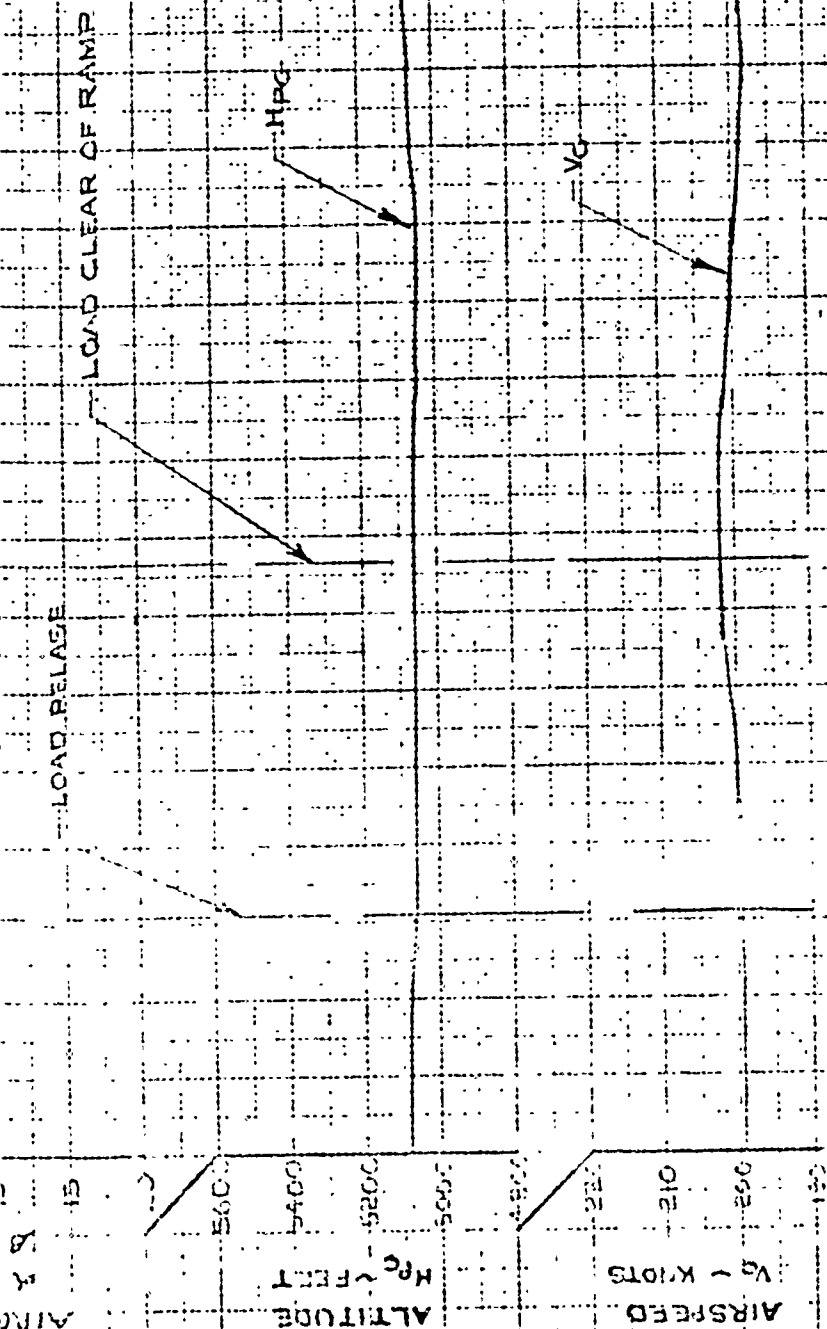
CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3764
VERT. ~ WL 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ ONE
2. CHUTE SIZE ~ 24 FT. FEETED TO 18 FT
3. RATED CHUTE FORT/CMG WT. ~ 88
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE 2-32A

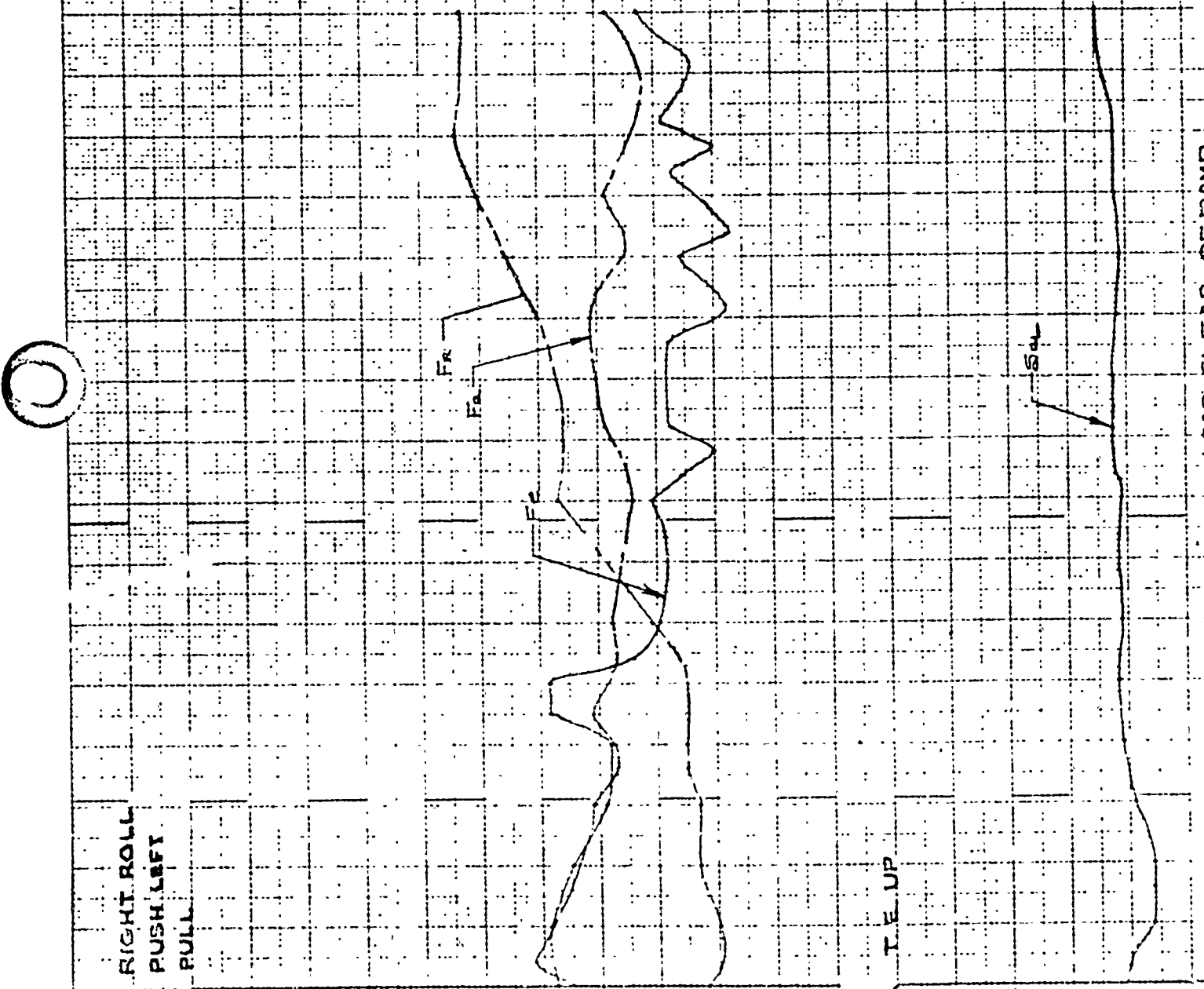
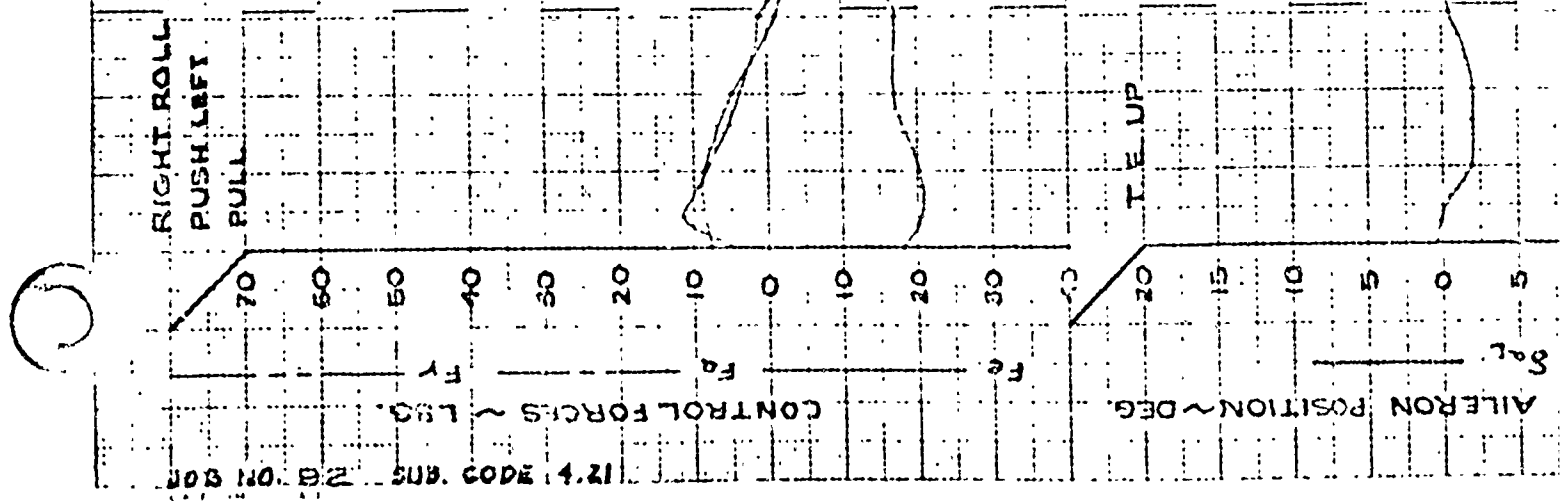


6008

ADS 77A

REVISED 12-17-65
MBH

6408
ADS 177B



PREPARED BY DTM
DATE 10-1-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-200

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 62 8077

LAC 6008

TEST DATE 9-30-65

FLIGHT 188

DROP NO 28

SHEET 2 OF 7

CARGO WT. ~24,700 LB

NOTE:
SEE FIGURE 132, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

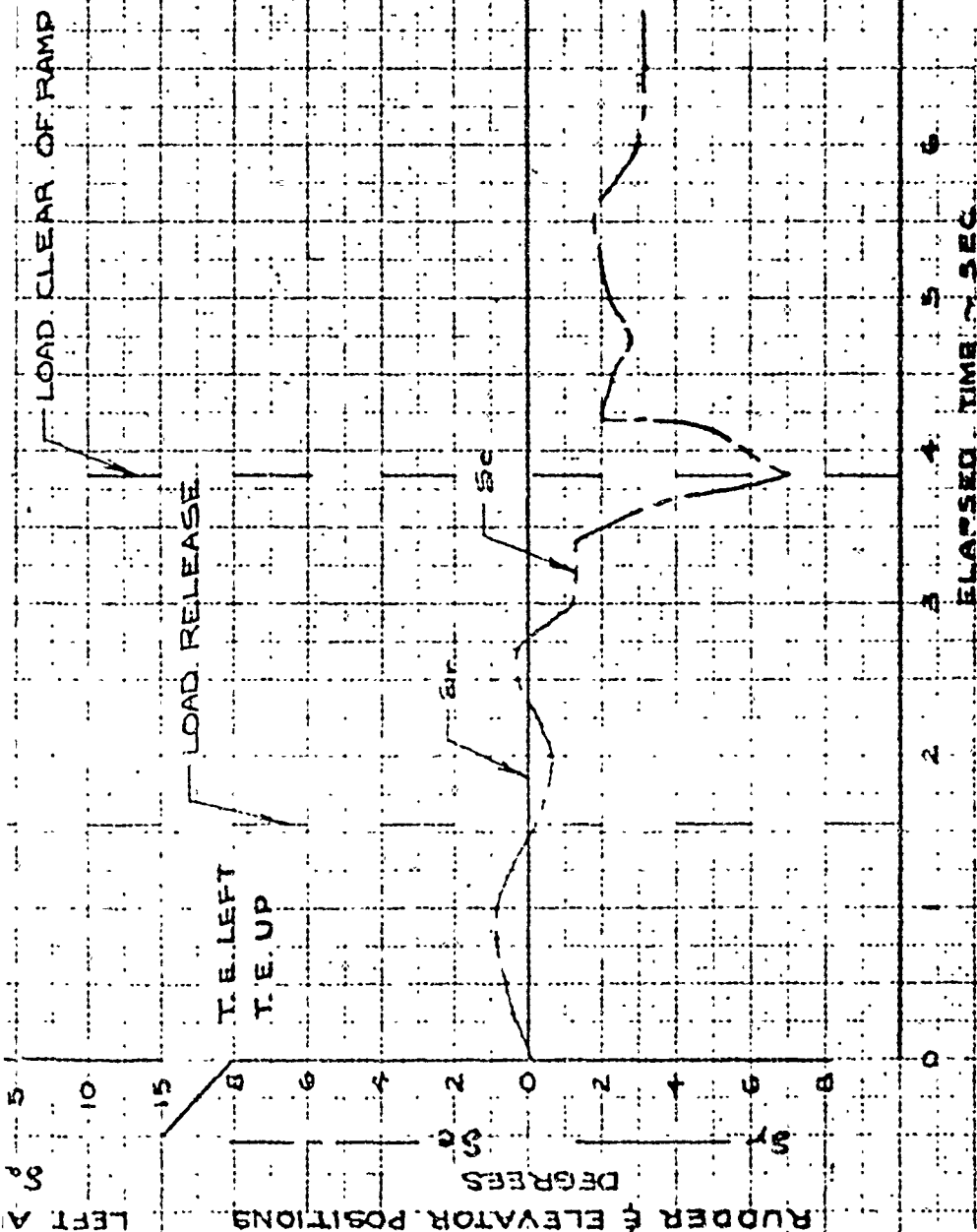


FIGURE 132B

6008
ADS 77B

6008
ADS 177C

NOTE: θ CALCULATED FROM N_z DATA

NOSE UP

40

20

0

θ

DEG/SEC²

PITCHING ACCELERATION

JOB NO. 02 SUB. CODE 4.2.1

UP ACCEL.

40

30

28

26

24

22

20

18

N_z FS 1637

N_z FS 277

ACCELERATIONS $\sim g$

LOAD CLEAR OF RAMP

LOAD RELEASE

N_z FS 1637

N_z FS 932 (C.G.)

N_z FS 277

PREPARED BY DTM
DATE 10-1-65
CHECKED BY *MD*

LOCKHEED OF INDIA COMPANY
AIR FORCE ENGINEERING AIRCRAFT RESEARCH

REPORT NO ER 5473
MODEL C-141A
PAGE D-201

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AF 63-B077 LAC 6008
TEST DATE 9-30-65
FLIGHT 188 DROP NO 28

SHEET 3 OF 7

CARGO WT. 24,700 LBS

NOTE:
SEE FIGURE D-32A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

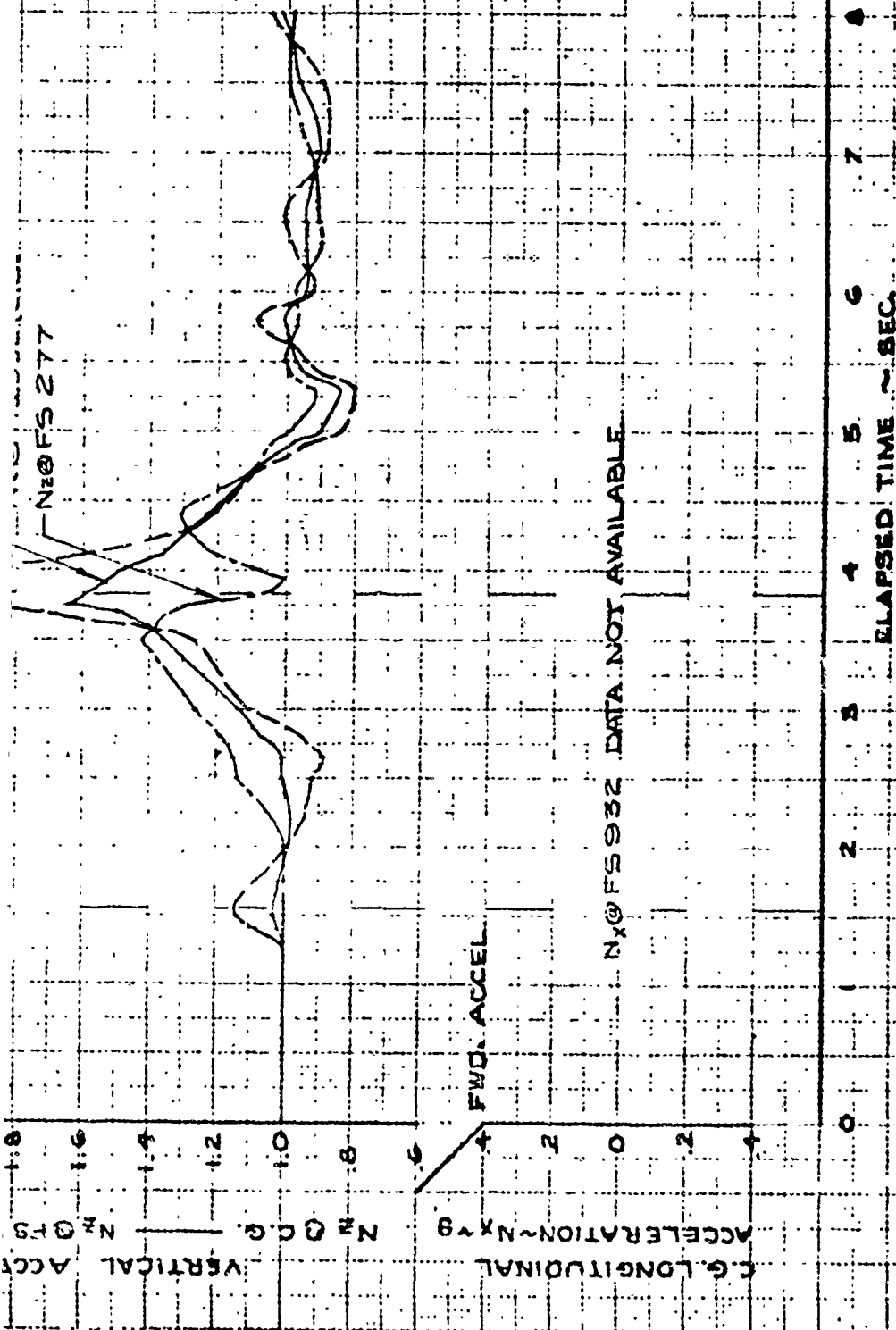
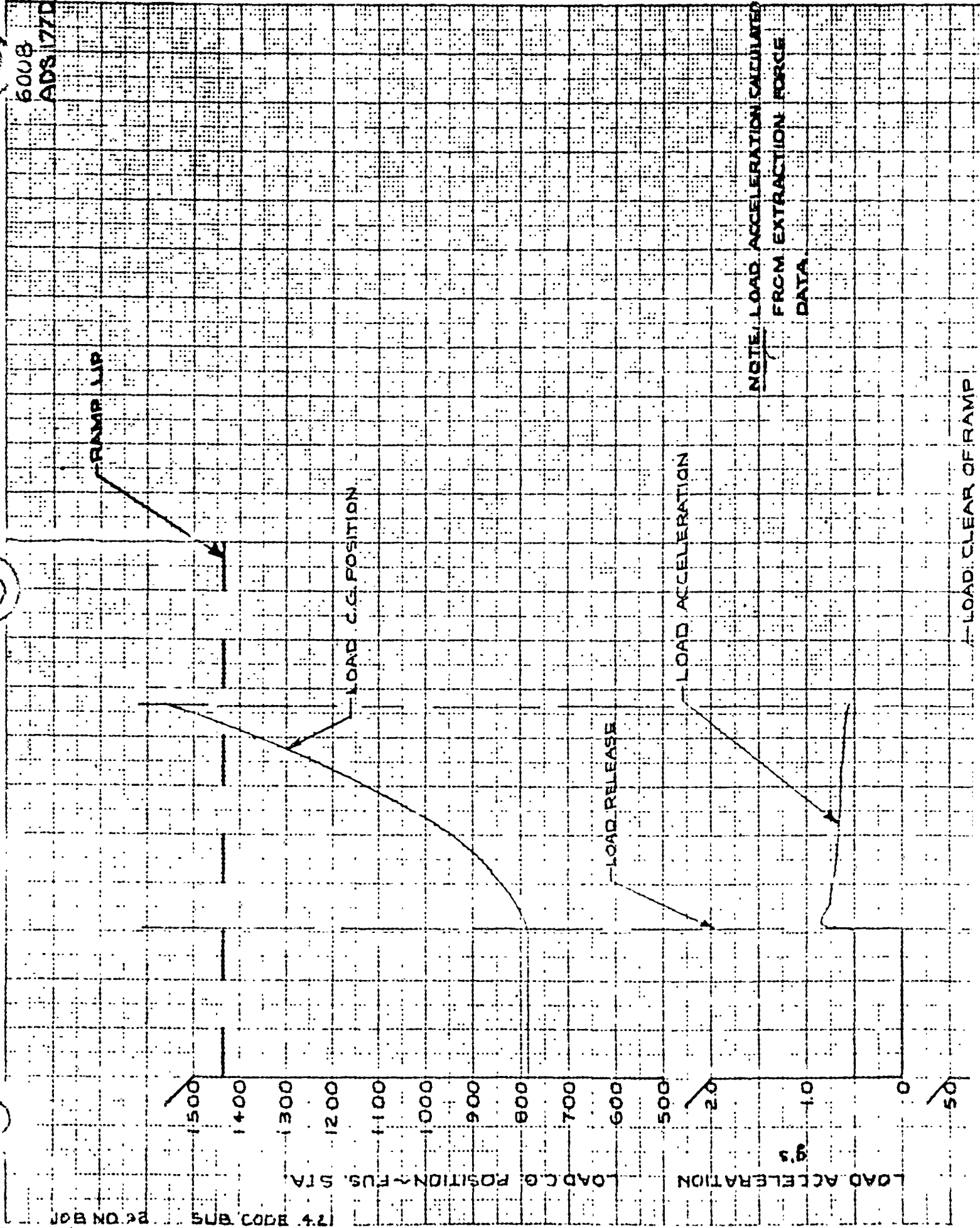


FIGURE D-32C

6008
ADS 177C

6008
ADS 177D



PREPARED BY JDC
DATE 12-1-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-202

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 9-30-65
FLIGHT 188 DROP NO. 28

SHEET 4 OF 7

CARGO WT. 24,700 LB.

NOTE:
SEE FIGURE D-32A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

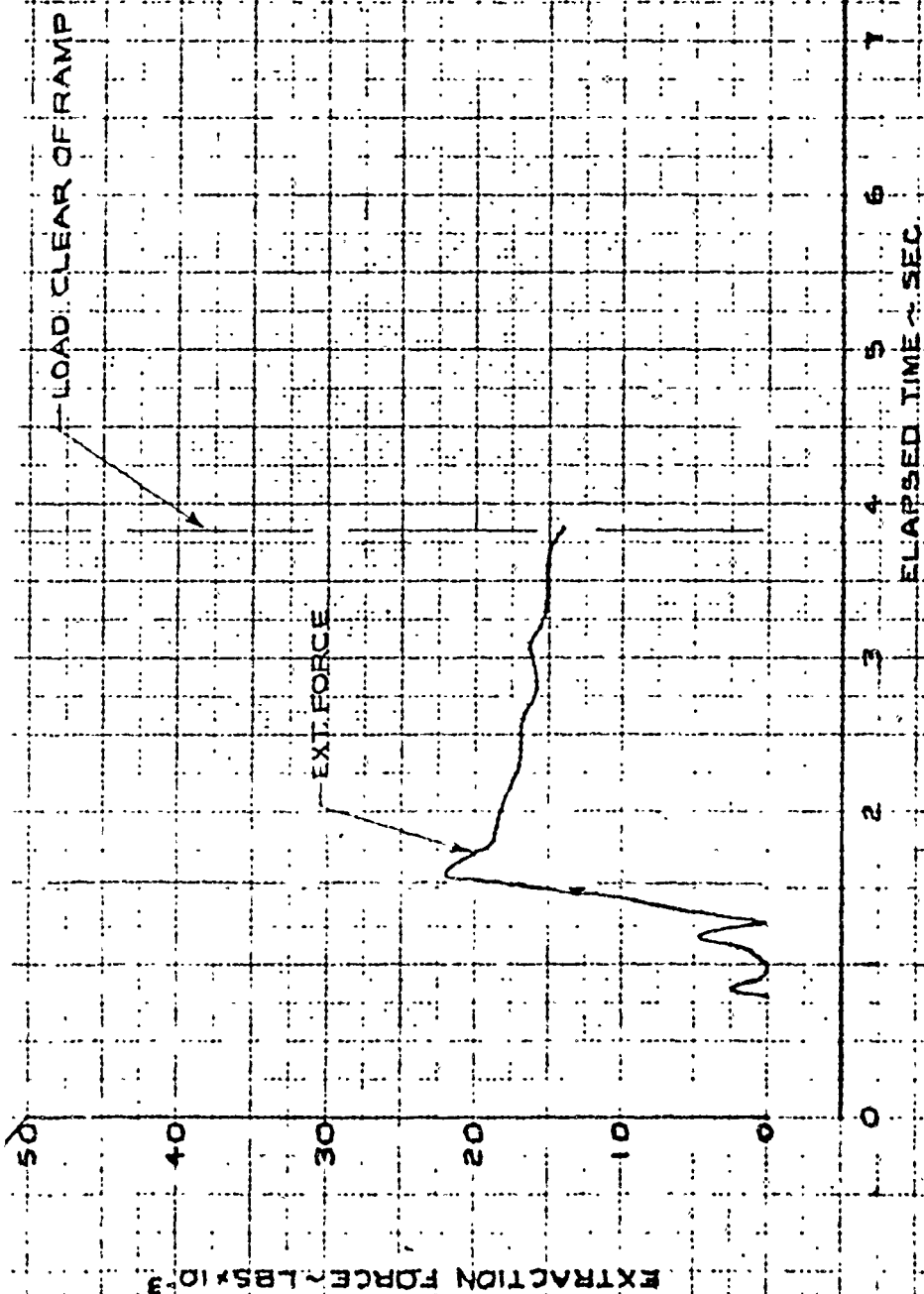


FIGURE D-32D

6008
ADS 177D

6008
ADS-177E

JOB NO. 92 SUB CODE 4.2.1

RAMP ACTUATOR LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

TENSION

LH RAMP ACTUATOR LOAD
RH RAMP ACTUATOR LOAD

TENSION

ADS LINK AXIAL LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

LH SPIDER ARM
RH SPIDER ARM

VERTICAL LOAD

R.H. ——— L.H. ———
LBS. X 10⁻³

DOWN LOAD

LH VERTICAL LOAD
RH VERTICAL LOAD

PULL RIGHT

LOADS

R.H. ——— L.H. ———
LBS. X 10⁻³

SIDE LOAD

PREPARED BY RID
 DATE 10-1-63
 BY JUP

LOCKHEED CORP. COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-203

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF 63-8077 LAC 6008
 TEST DATE: 9-30-65
 FLIGHT 155 DROP NO. 20

SHEET 5 OF 7

CARGO WT. 24,700 LBS

NOTE:
 SEE FIGURE D-32A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

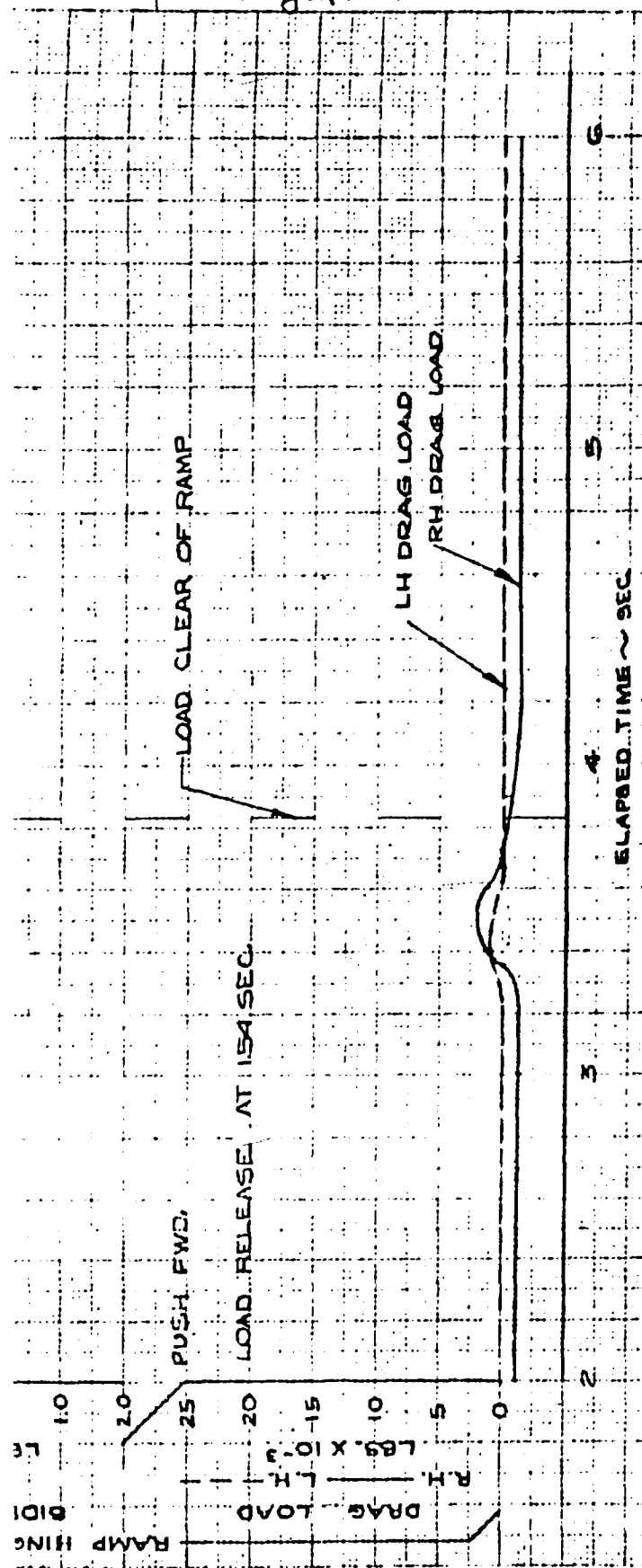
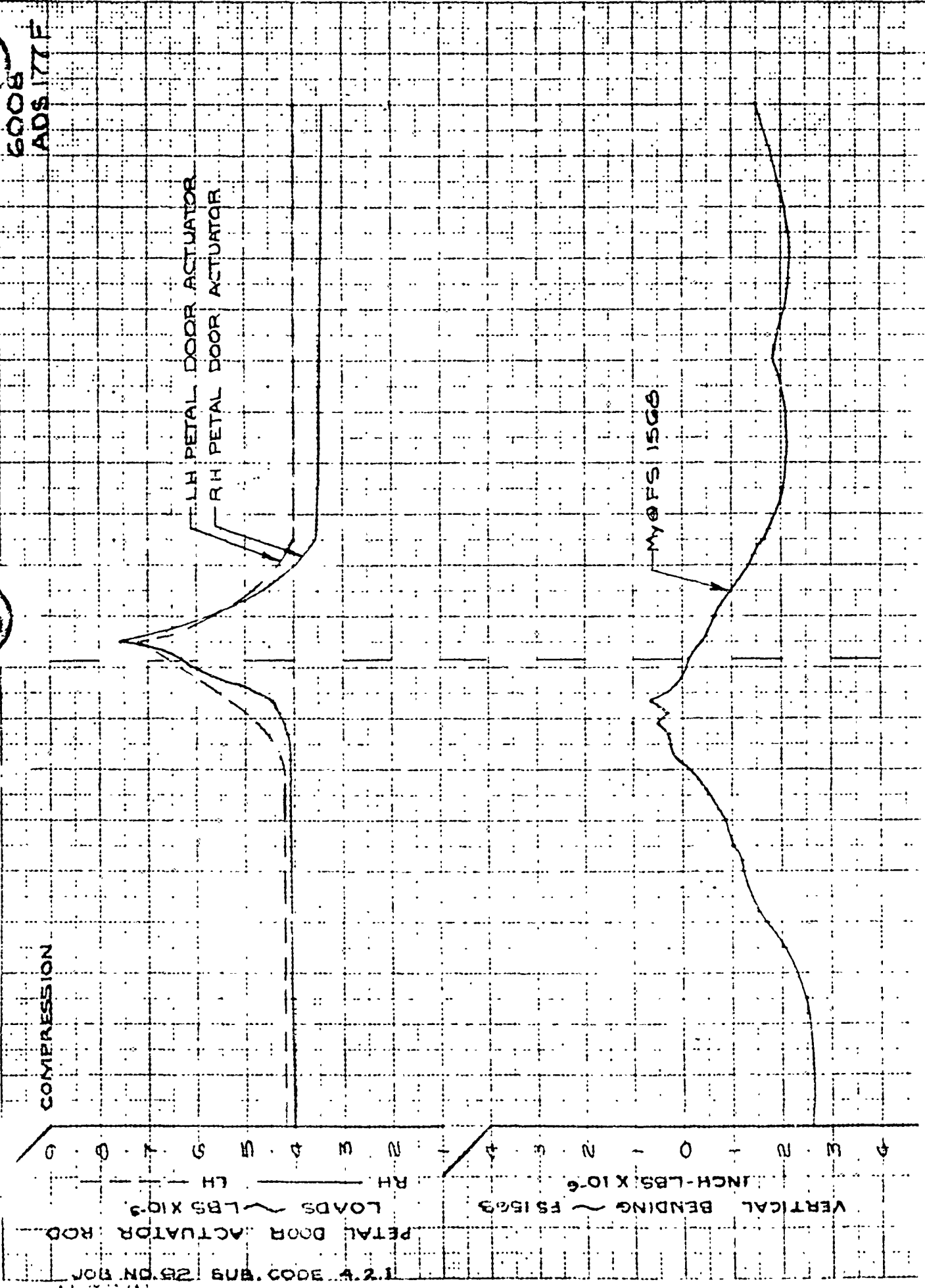


FIGURE D-32E

6008
 ADS-177E



PREPARED BY DTM
DATE 10-1-68
CHECKED BY JMD

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-204

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-8077

LAC 6008

TEST DATE 9-30-68

FLIGHT 18A

DROP NO 28

SHEET 6 OF 7

CARGO WT. ~ 24,700 LBS

NOTE:

SEE FIGURE D-32A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

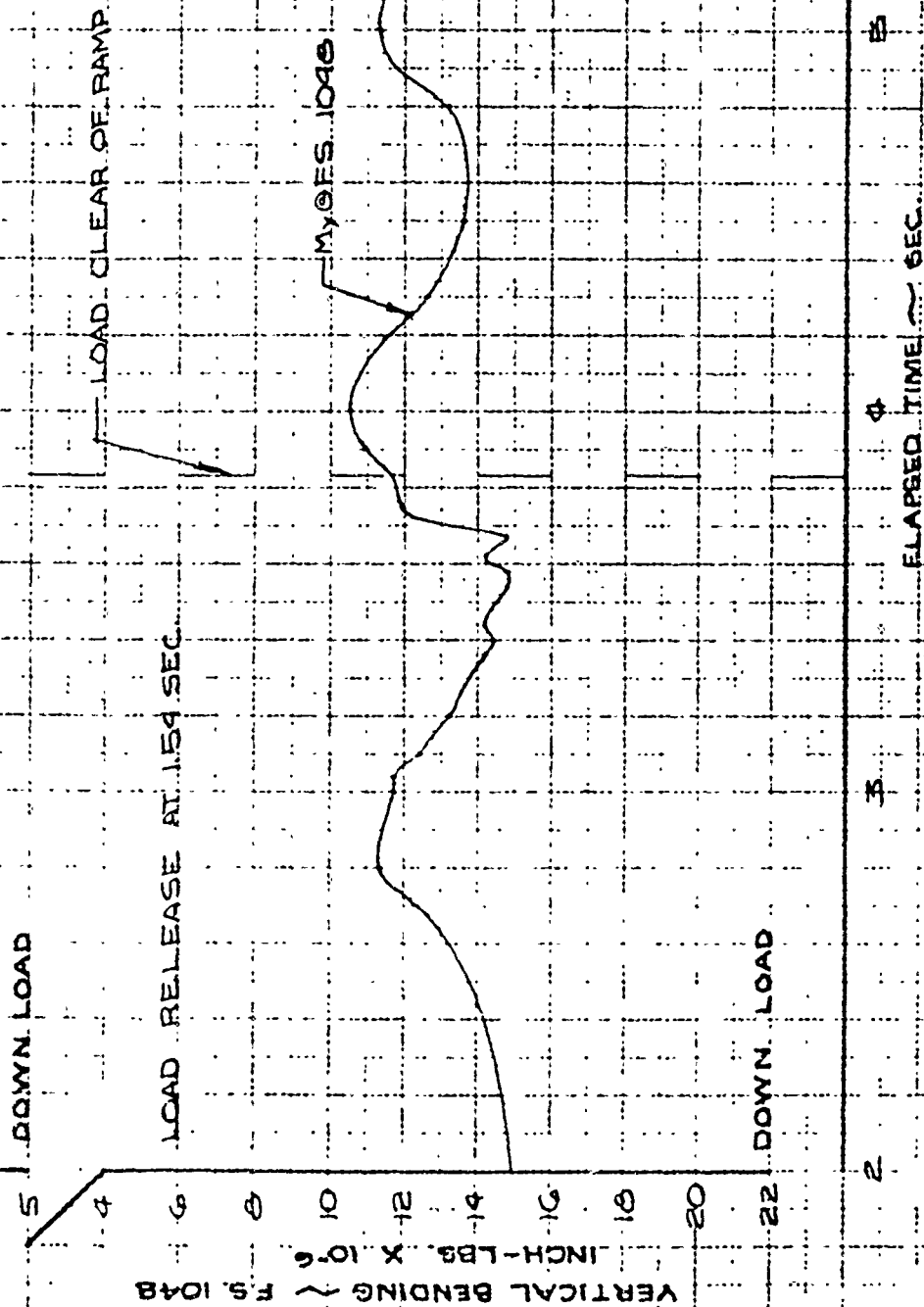


FIGURE D-32F

6008
ADS 177F



6008
ADS 177G



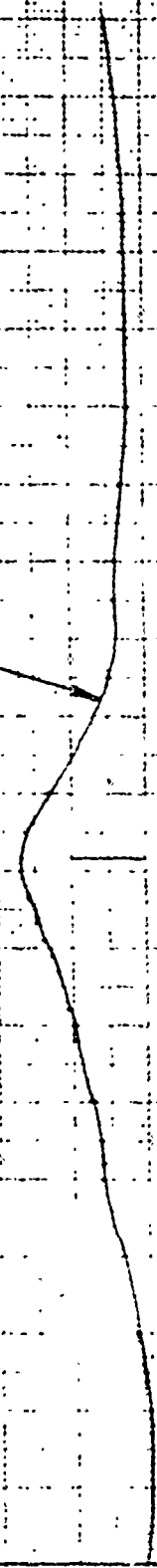
UP LOAD

20
15
10
5
0
5
10
15
20

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ LB X 10⁻³

JOB NO. 22 SUB. CODE 4.2.1

5 1/2 @ HBL 44L



UP LOAD

20
15
10
5
0
5
10
15
20

BENDING @ HBL 44L ~ M'X
INCH - LB X 10⁻⁶

Mk @ HBL 44L



LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

PREPARED BY DTM

DATE 10-1-65

CHECKED BY JEP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL 0-141A

PAGE D-205

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 9-30-65

FLIGHT 188

DROP NO. 28

SHEET 7 OF 7

CARGO WT. ~ 24,700 LBS.

NOTE:
SEE FIGURE D-32A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

LOAD RELEASE AT 15A SEC.

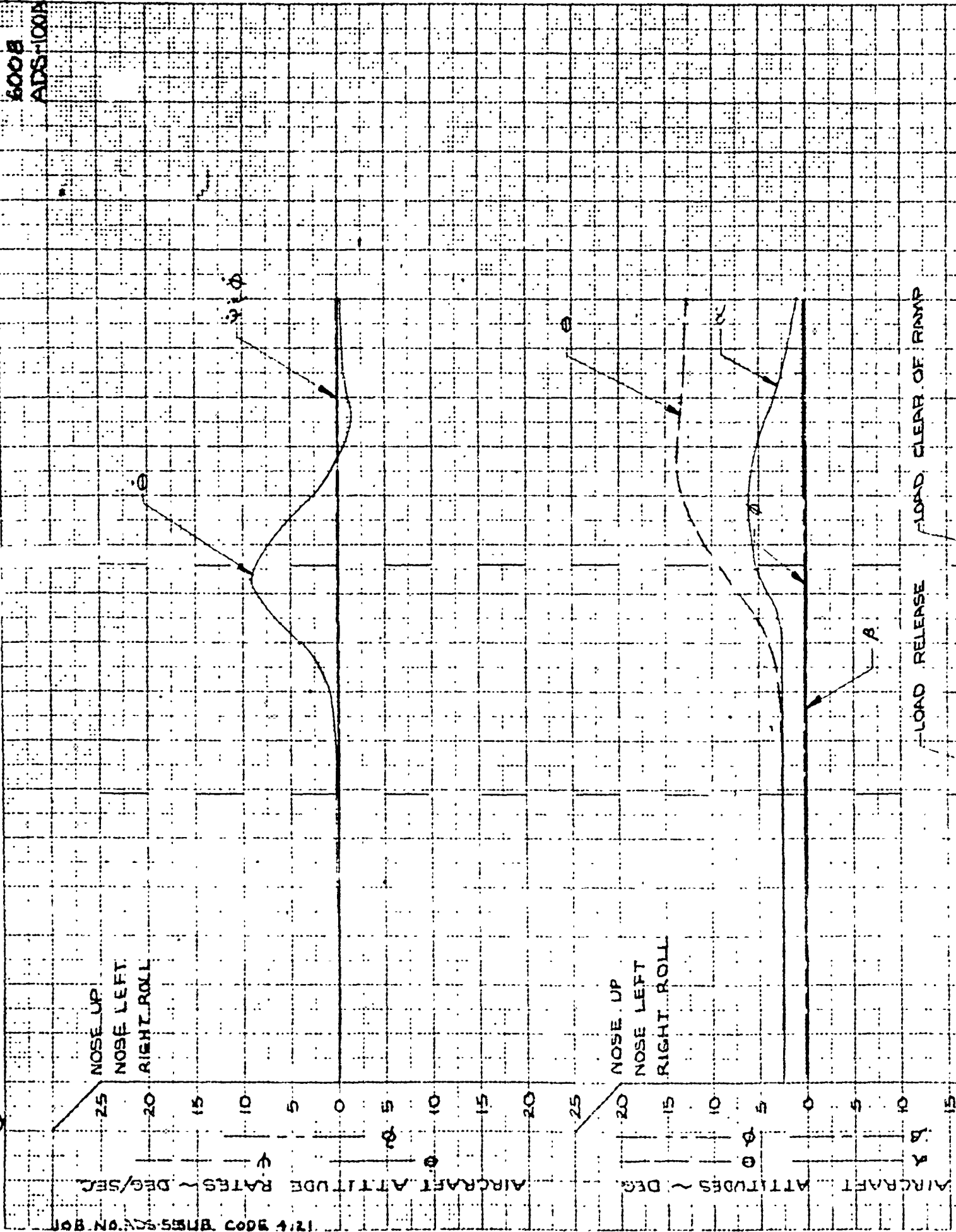
M&Q VSS 345 DATA NOT AVAILABLE

FIGURE D-32G

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M
~ INCH-LBS X 10⁻⁶

6008
ADS 177G

6008
ADS-1008



JOB NO. 12-55 SUB CODE 4/21

PREPARED BY **TED**
 DATE **6-21-65**
 CHECKED BY **JUP**

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-206**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
AF638077 **LAC 6008**
 TEST DATE **6-18-65**
 FLIGHT **143** DROP NO. **29**

SHEET **1** OF **1**

CARGO WT. 35700 LBS.

RUN CONDITIONS

1. G. W. $\sim 195,900$ LBS.
2. C. G. PRIOR TO DROP $\sim 19.5\%$ MAC
3. C. G. AFTER DROP $\sim 30.3\%$ MAC
4. FLAPS $\sim 70\%$
5. GEAR \sim UP
6. AVG. EPR ~ 1.27 (4 ENGINES)
7. $\alpha_H \sim 4.35$ DEG (A/C N.U.)

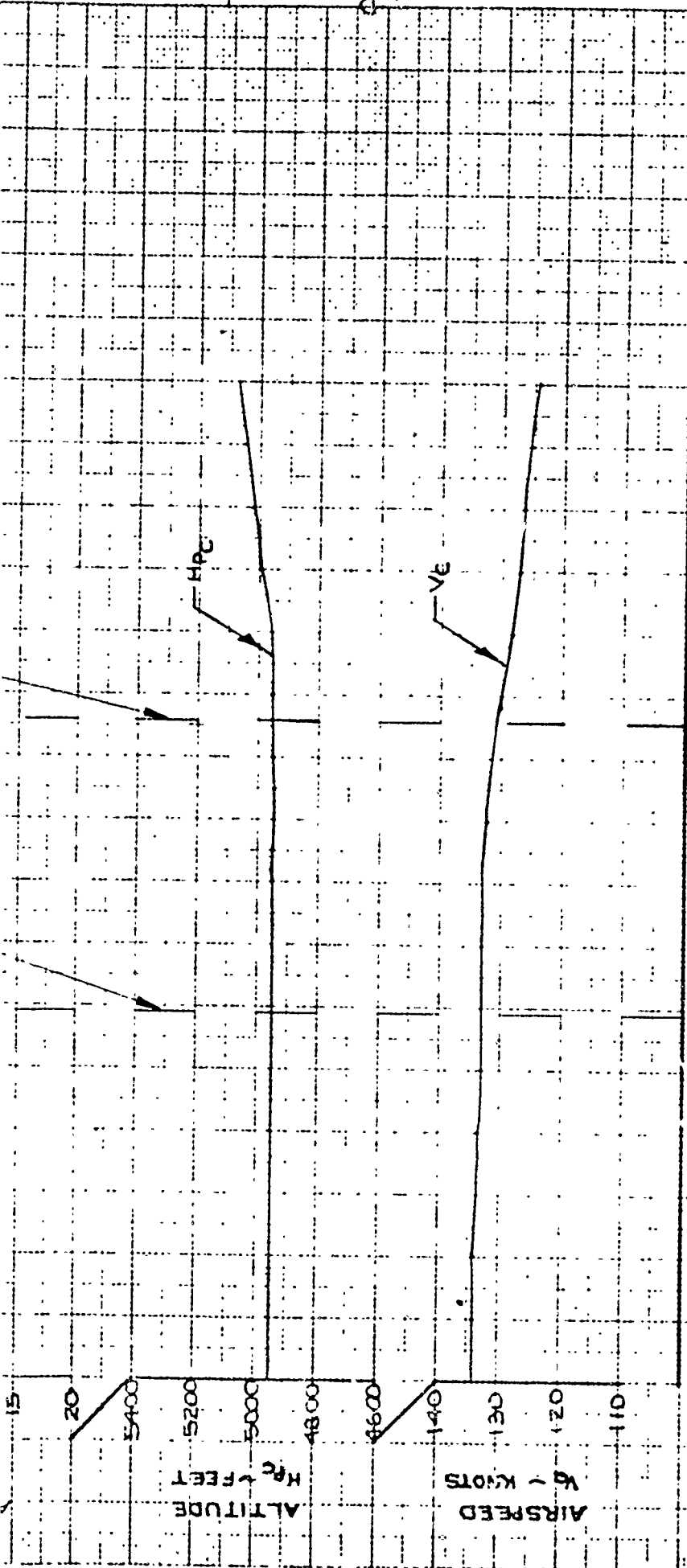
CARGO DESCRIPTION

1. TYPE CARRIER \sim PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. $\sim F3.781$
VERT. $\sim YL 175$

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 25 FT
3. RATED CHUTE FORCE/CARGO WT. ~ 1.09
4. EXTRACTION LINE LENGTH ~ 100 FT.

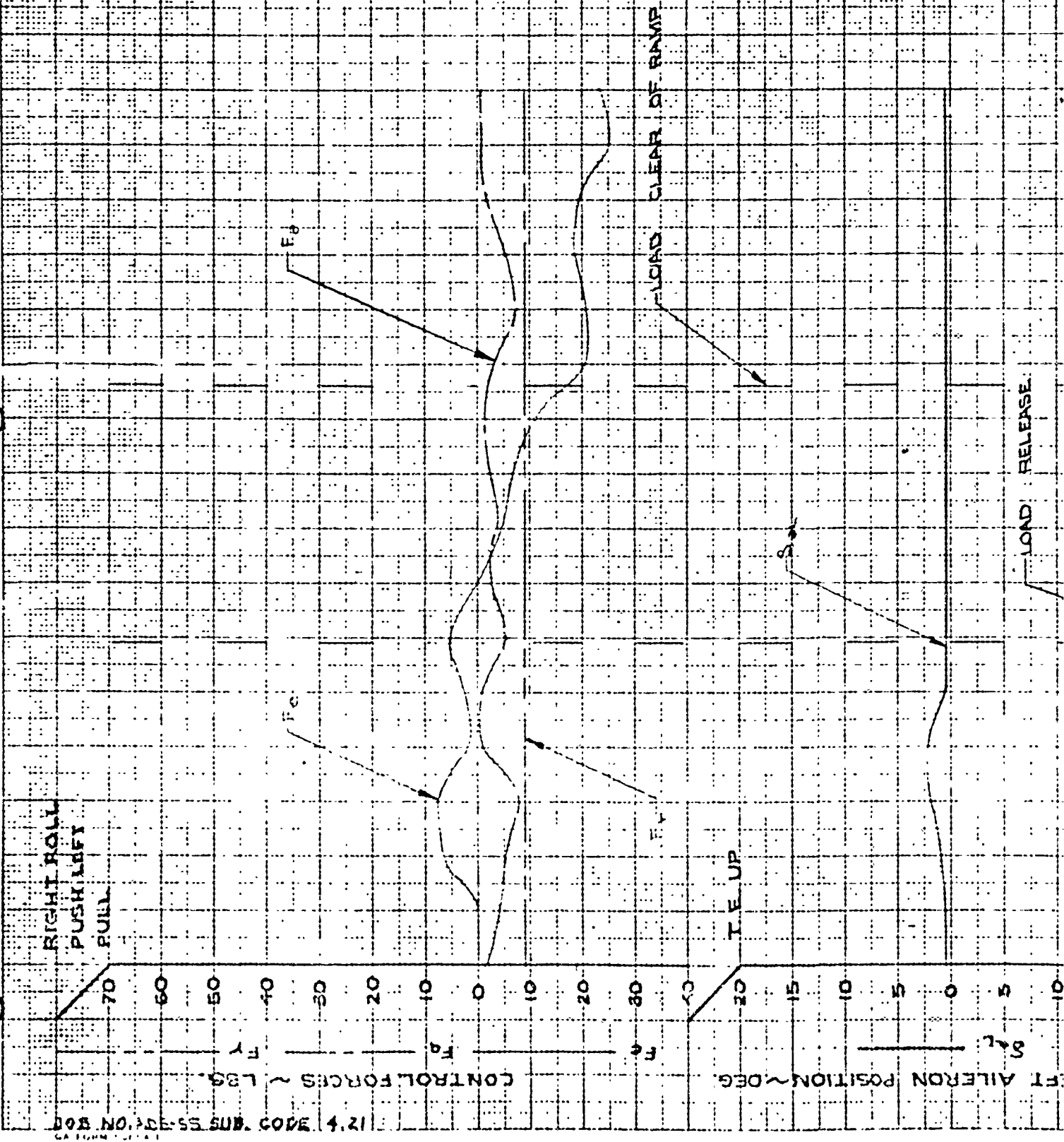
FIGURE **1-33A**



6008

AD5-100N
 REVISED 12-15-65
 MBH

6008
ADS-100B



PREPARED BY TED

DATE 6-21-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE D-207

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 14-15-65

FLIGHT 143

DROP NO 29

SHEET 2 OF 1

CARGO WT 35,700 LBS

NOTE:

SEE FIGURE 0-33 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

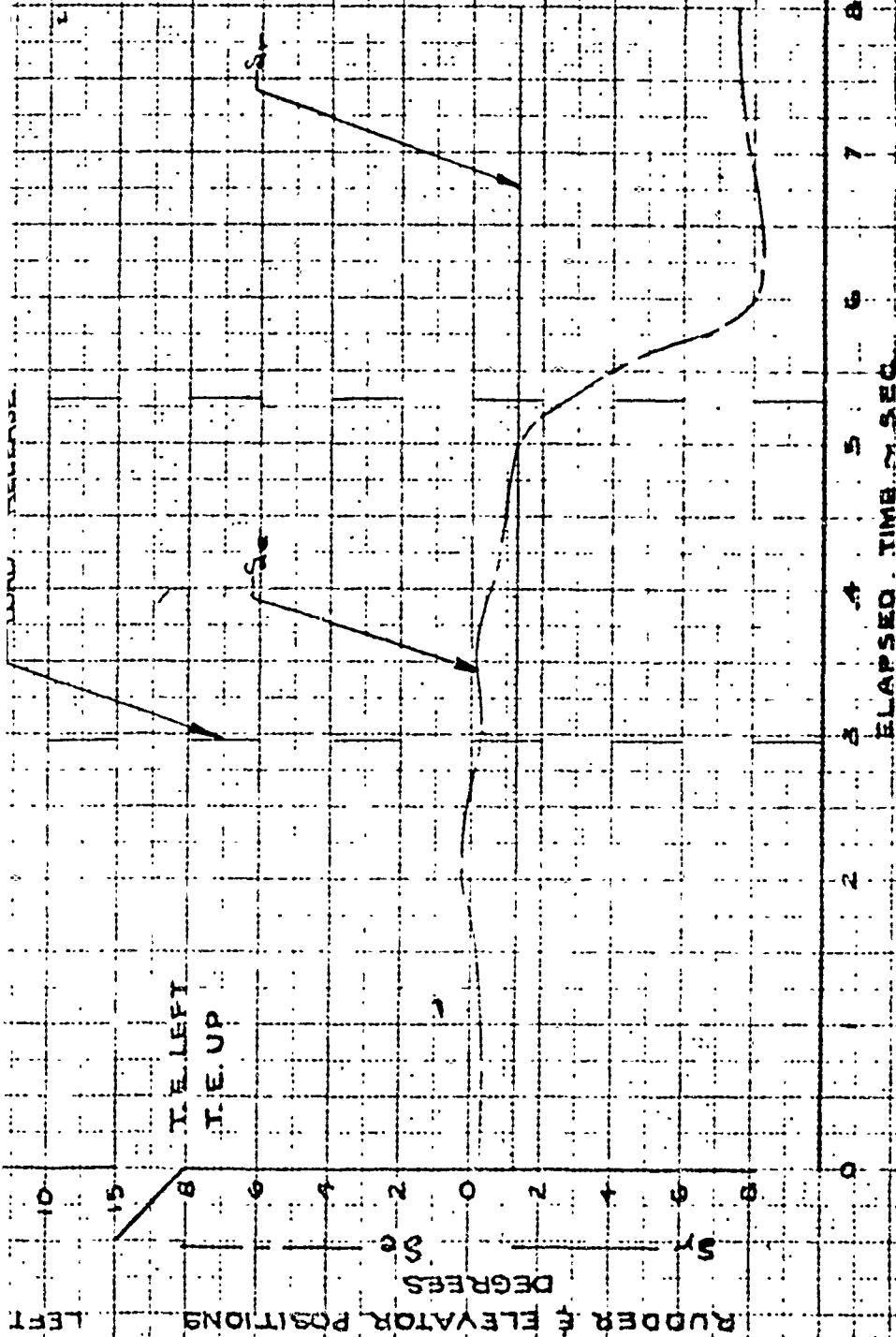


FIGURE 0-33B

6008

ADS-008

6008
ADS-100C

JOB NO. ADS-55 SUB. CODE 4.2.1

NOSE UP

PITCHING ACCELERATION
DEG/SEC²

NOTE: $\dot{\theta}$ CALCULATED FROM N_z DATA

LOAD RELEASE

LOAD CLEAR OF RAMP

UP ACCEL.

L ACCELERATIONS ~ g
 N_z @ FS 277
 N_z @ FS 1637

N_z @ FS 1637

N_z @ FS 932 (CLG)

N_z @ FS 277



PREPARED BY **TED.**
 DATE **6-21-68**
 CHECKED BY **JWP**

ROCKWELL INTERNATIONAL COMPANY
 AERONAUTICAL DIVISION

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **D-208**

208

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL **C141A**
AFG3-8077 **LAC 6008**
 TEST DATE **6-18-68**
 FLIGHT **143** **DROP NO. 29**

SHEET 3 OF 1

CARGO WT. 35,700 LBS.

NOTE:
 SEE FIGURE D-33A SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

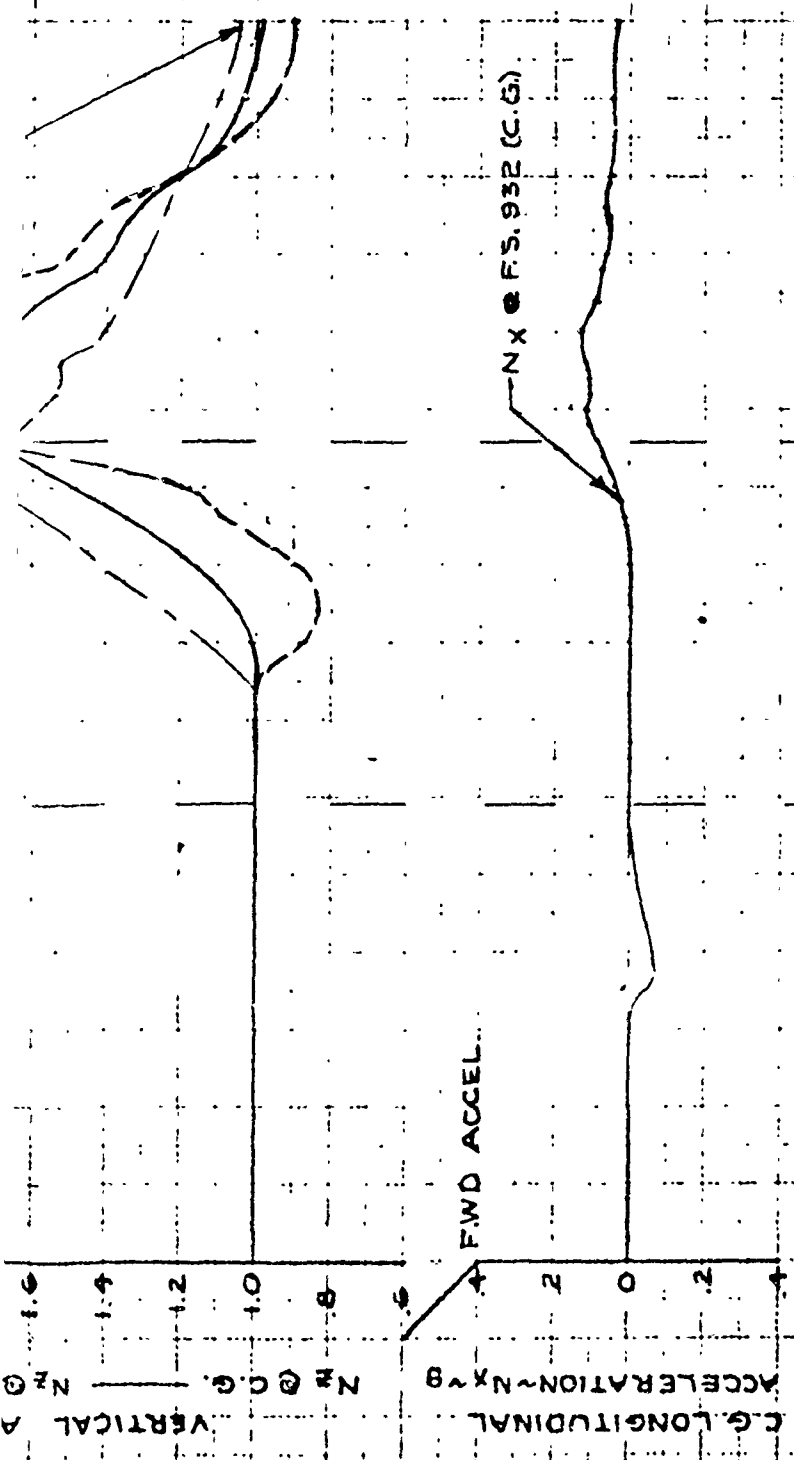


FIGURE D-33C

6008
ADS-00C

6008
ADS-1000

10B NQPS-55 SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA

LOAD ACCELERATION

g's

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

LOAD RELEASE

LOAD CLEAR OF RAMP

50

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

200

210

220

230

240

250

260

270

280

290

300

310

320

330

340

350

360

370

380

390

400

410

420

430

440

450

460

470

480

490

500

510

520

530

540

550

560

570

580

590

600

610

620

630

640

650

660

670

680

690

700

710

720

730

740

750

760

770

780

790

800

810

820

830

840

850

860

870

880

890

900

910

920

930

940

950

960

970

980

990

1000

1010

1020

1030

1040

1050

1060

1070

1080

1090

1100

1110

1120

1130

1140

1150

1160

1170

1180

1190

1200

1210

1220

1230

1240

1250

1260

1270

1280

1290

1300

1310

1320

1330

1340

1350

1360

1370

1380

1390

1400

1410

1420

1430

1440

1450

1460

1470

1480

1490

1500

1510

1520

1530

1540

1550

1560

1570

1580

1590

1600

1610

1620

1630

1640

1650

1660

1670

1680

1690

1700

1710

1720

1730

1740

1750

1760

1770

1780

1790

1800

1810

1820

1830

1840

1850

1860

1870

1880

1890

1900

1910

1920

1930

1940

1950

1960

1970

1980

1990

2000

2010

2020

2030

2040

2050

2060

2070

2080

2090

2100

2110

2120

2130

2140

2150

2160

2170

2180

2190

2200

2210

2220

2230

2240

2250

2260

2270

2280

2290

2300

2310

2320

2330

2340

2350

2360

2370

2380

2390

2400

2410

2420

2430

2440

2450

2460

2470

2480

2490

2500

2510

2520

2530

2540

2550

2560

2570

2580

2590

2600

2610

2620

2630

2640

2650

2660

2670

2680

2690

2700

2710

2720

2730

2740

2750

2760

2770

2780

2790

2800

2810

2820

2830

2840

2850

2860

2870

2880

2890

2900

2910

2920

2930

2940

2950

2960

2970

2980

2990

3000

3010

3020

3030

3040

3050

3060

3070

3080

3090

3100

3110

3120

3130

3140

3150

3160

3170

3180

3190

3200

3210

3220

3230

3240

<

PREPARED BY **TED**
DATE **6-21-65**
CHECKED BY **[Signature]**

LOCKHEED C-141A COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **D-209**

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL **C-141A**
AF **63-8077** LAC **6008**
TEST DATE **6-18-65**
FLIGHT **143** DROP NO. **29**

SHEET **4** OF **7**

CARGO WT. 35,700 LBS

NOTE:

SEE FIGURE **D-33A**, SHEET **1** OF **7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

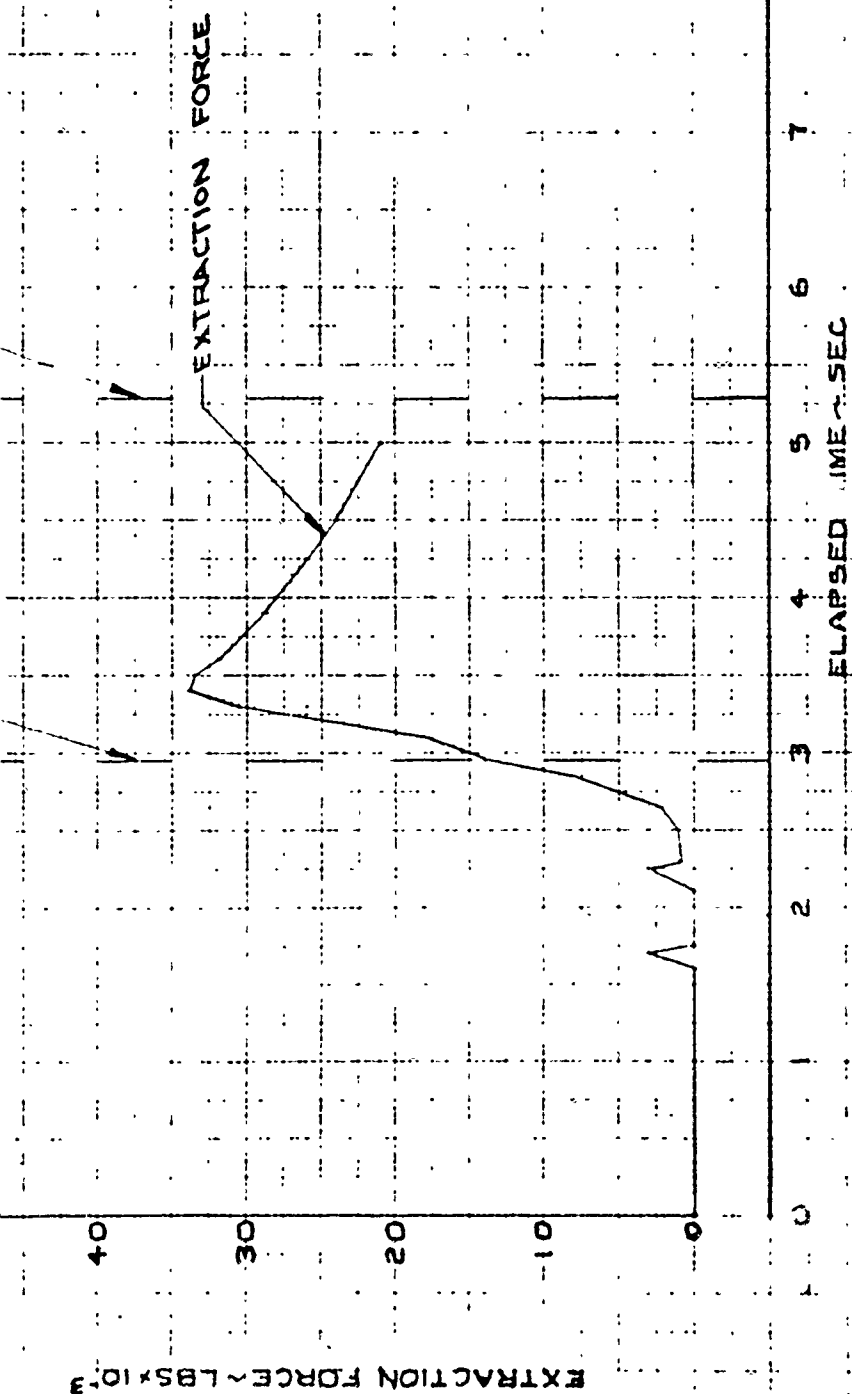
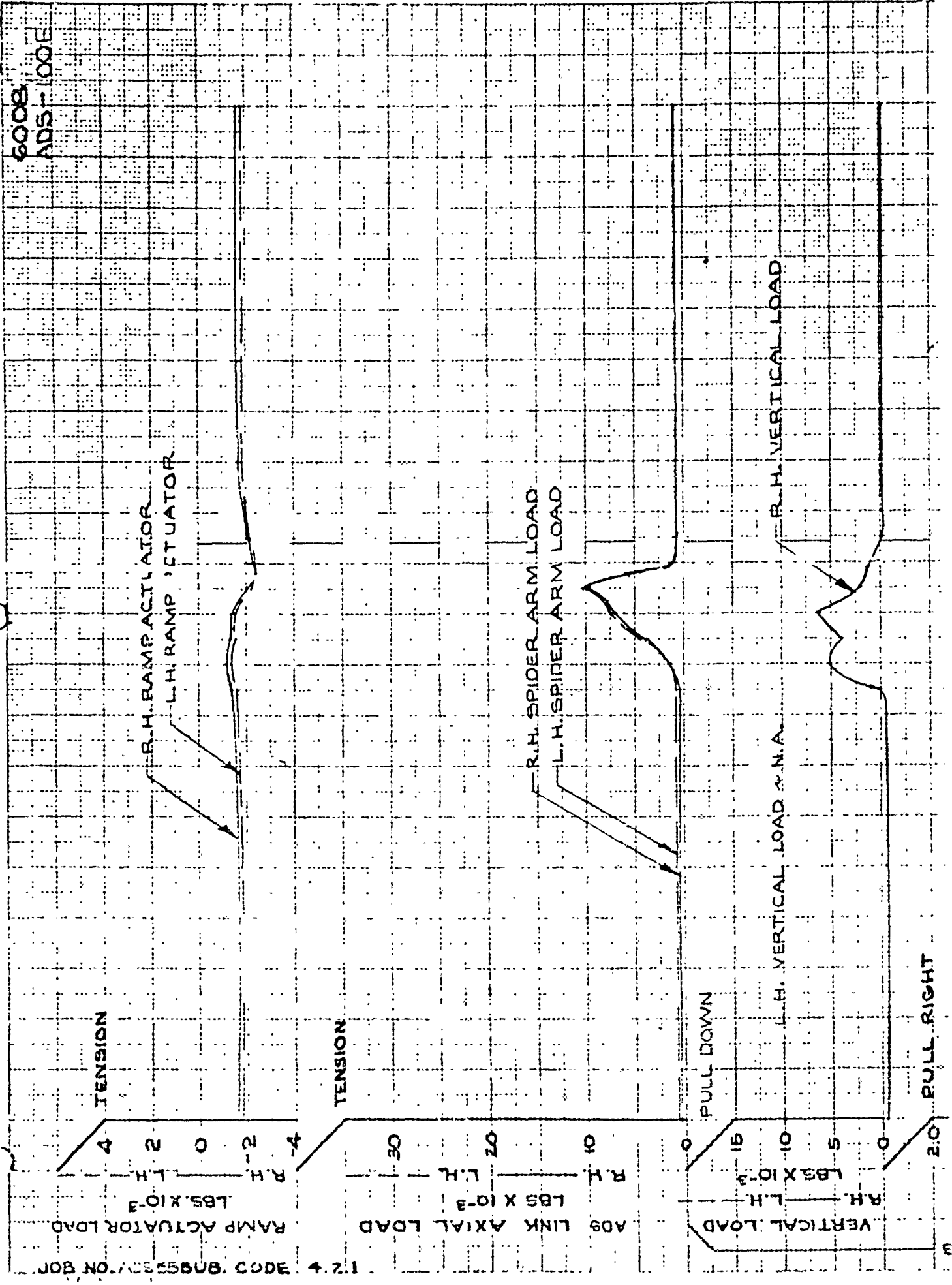


FIGURE D-33D

6008
ADS-1000



PREPARED BY FCW
 DATE 6-21-65
 CHECKED BY *AWD*

LOCKHEED T. P. A. COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-210

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 6-18-65

FLIGHT 143

DROP NO. 29

SHEET 5 OF 7

CARGO WT. 35700 LBS

NOTE:

SEE FIGURE D-33A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

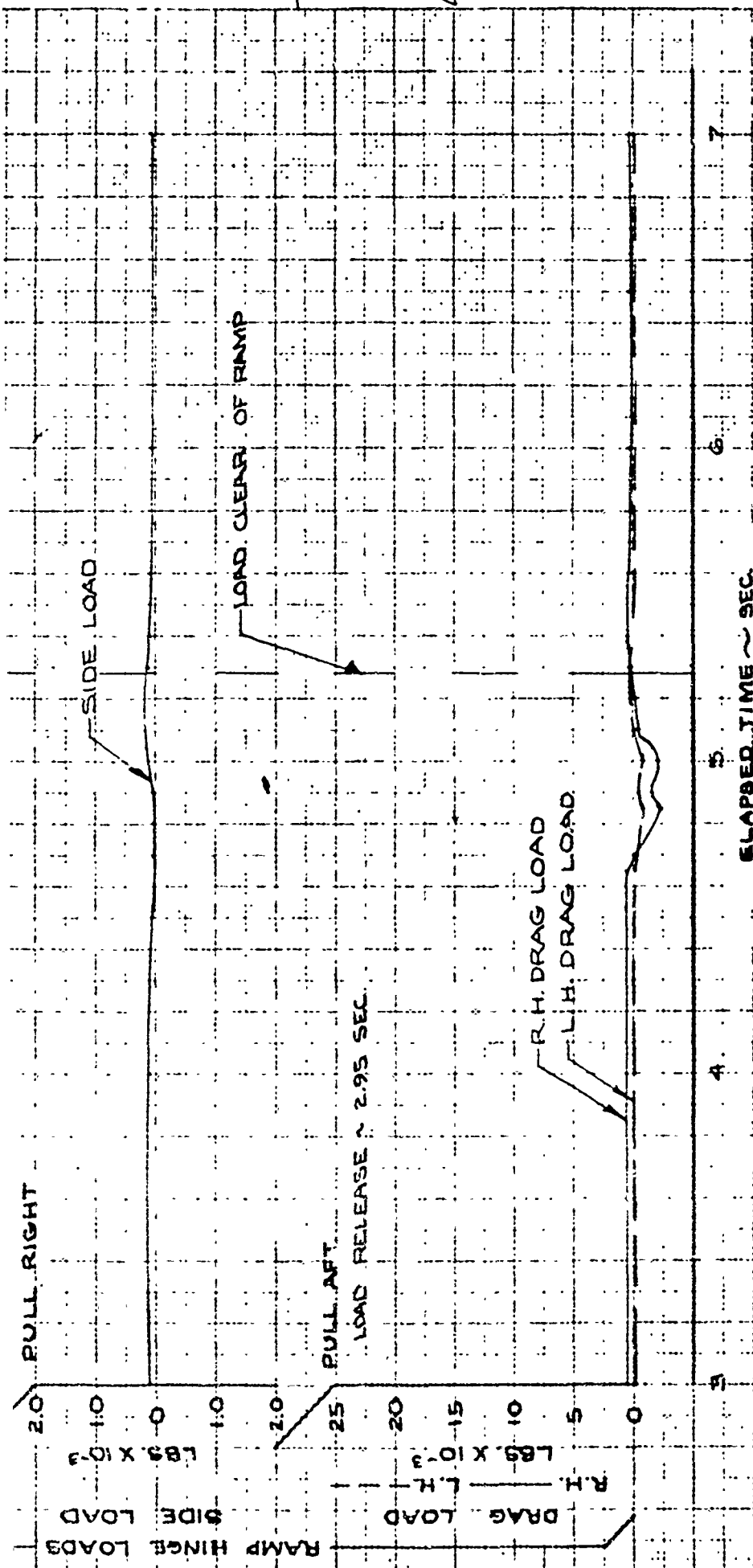
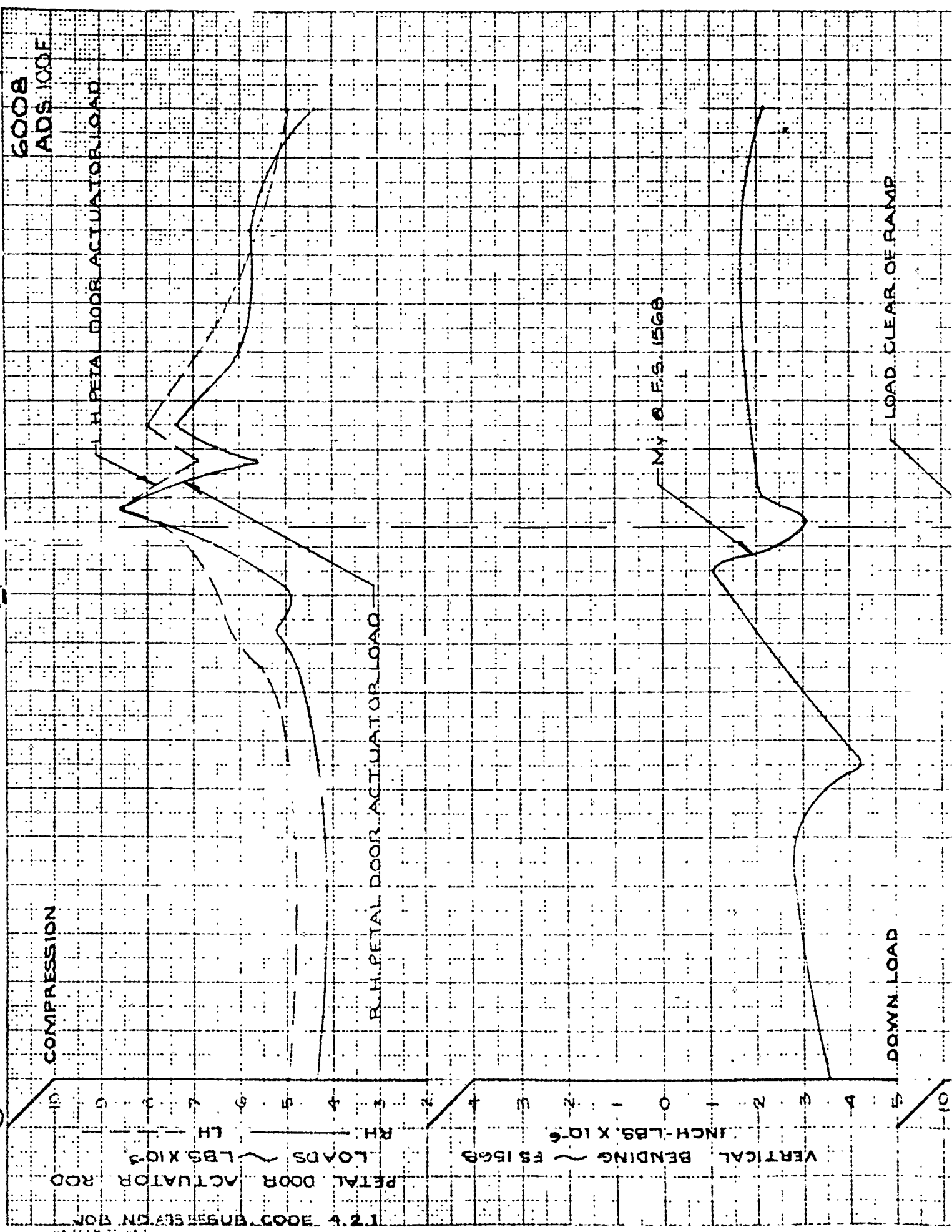


FIGURE D-33E

6008
 ADS-100E



PREPARED BY FCW
DATE 6-21-65
CHECKED BY JED

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-211

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 6-18-65

FLIGHT 143

DROP NO. 29

SHEET 6 OF 7

CARGO WT. 35700 LBS.

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

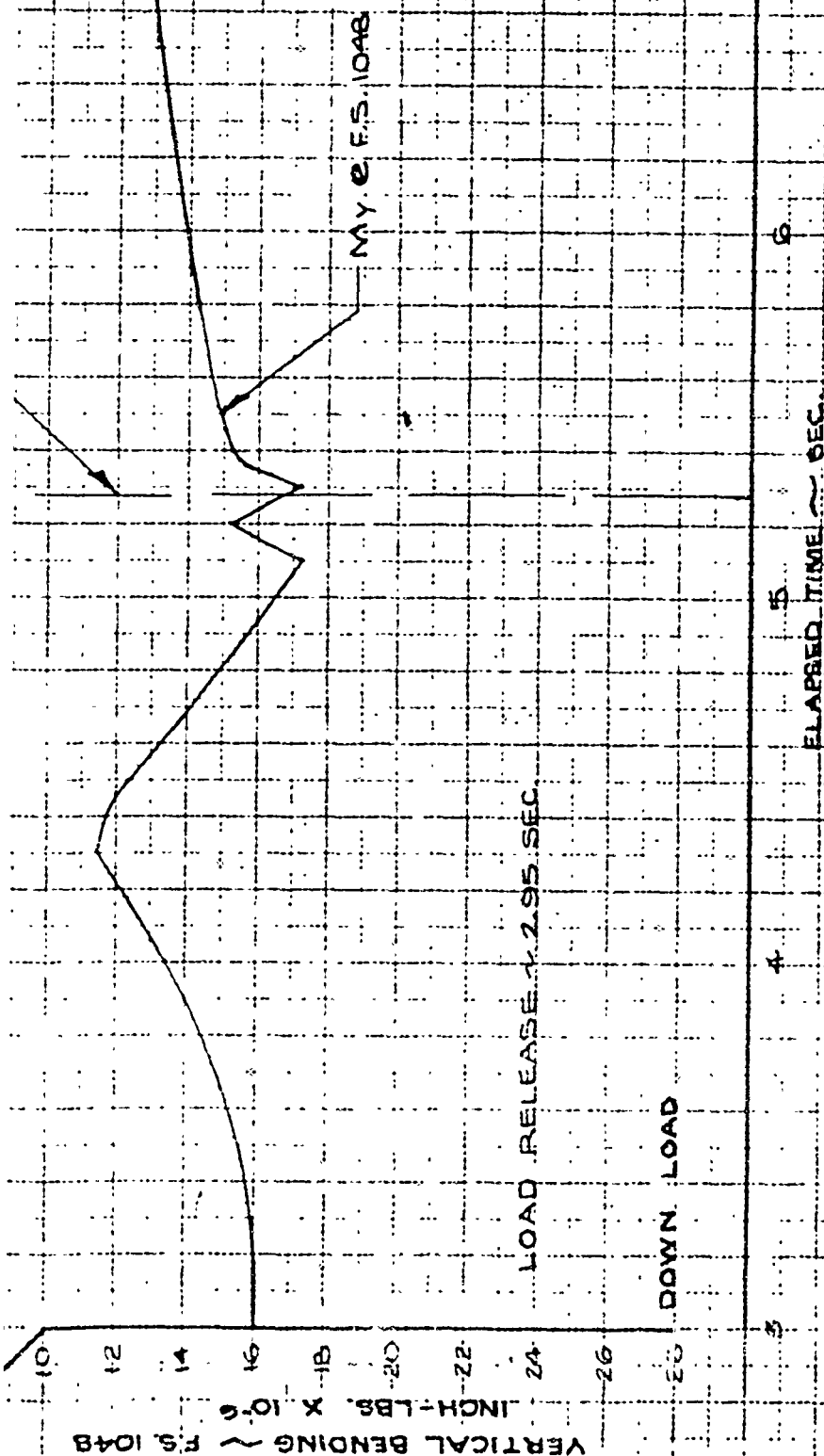
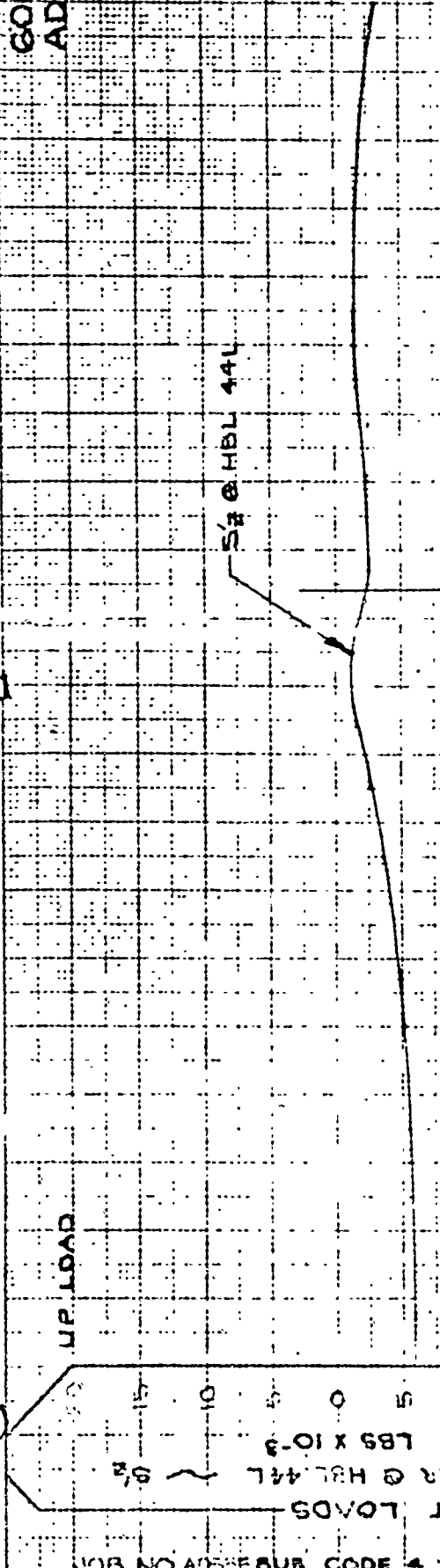


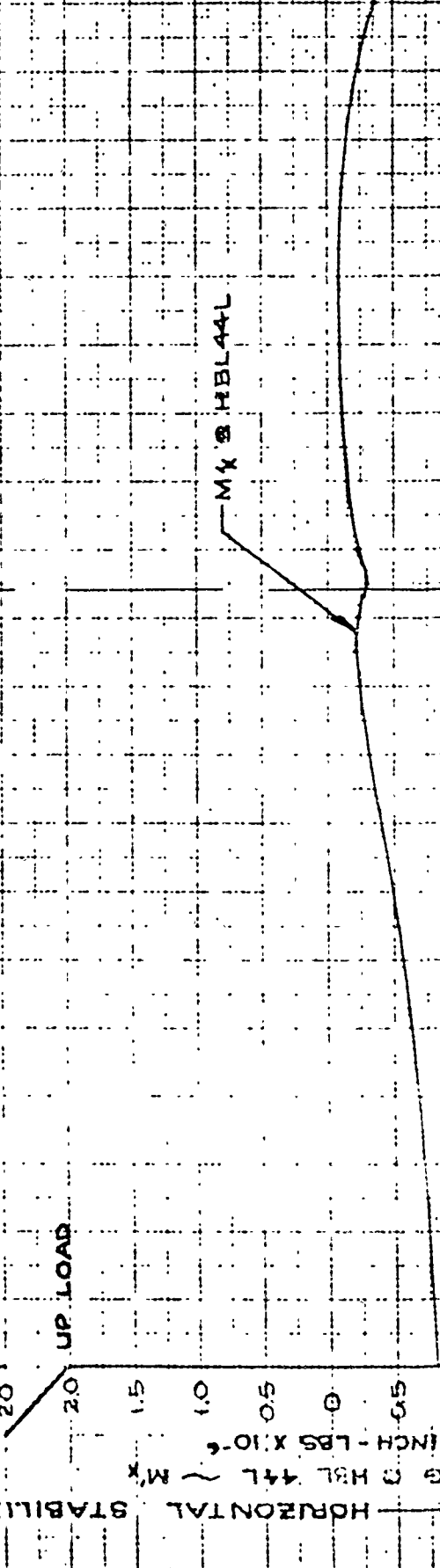
FIGURE D-33F

6008
ADS.100F

6008
ADS 100G



S₂ @ HBL 44L



M_X @ HBL 44L

LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

PREPARED BY FCW
DATE 6-21-65
CHECKED BY JEP

UNOFFICIAL REPORT OF INVESTIGATION
AND RECORD OF LOCKHEED AERONAUTICAL COMPANY

REPORT NO. ER 5473
MODEL C-141A
PAGE D-212

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 6-18-65
FLIGHT 143 DROP NO. 29

SHEET 7 OF 7

CARGO WT. 35700 LBS

NOTE:
SEE FIGURE D-33A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

M_x @ VSS 345

LOAD RELEASE ~ 2.95 SEC.

ELAPSED TIME ~ SEC.

FIGURE D-33G

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M_x
~ INCH-LBS X 10⁻⁶

6008
ADS-100G

ADSI 166A

6009

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE RATES ~ DEG/SEC

JOB No. 25 SUB CODE 4.21

$\dot{\phi}$ $\dot{\psi}$

LOAD RELEASE

LOAD CLEAR OF RAMP

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDES ~ DEG

θ
 α
 ϕ

PREPARED BY JDG

DATE 9-15-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE D-213

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 600B

TEST DATE 9-14-65

FLIGHT 183

DROP NO. 30

SHEET 1 OF 7

CARGO WT. 21,050 LB.

RUN CONDITIONS

1. G. W. ~ 253,900
2. C. G. PRIOR TO DROP ~ 26.1% MAC
3. C. G. AFTER DROP ~ 31.2% MAC
4. FLAPS ~ 55%
5. GEAR ~ UP
6. AVG. EPR ~ 131 EPR
7. $\alpha_H \sim 1.9^\circ$ (A/C NUL)

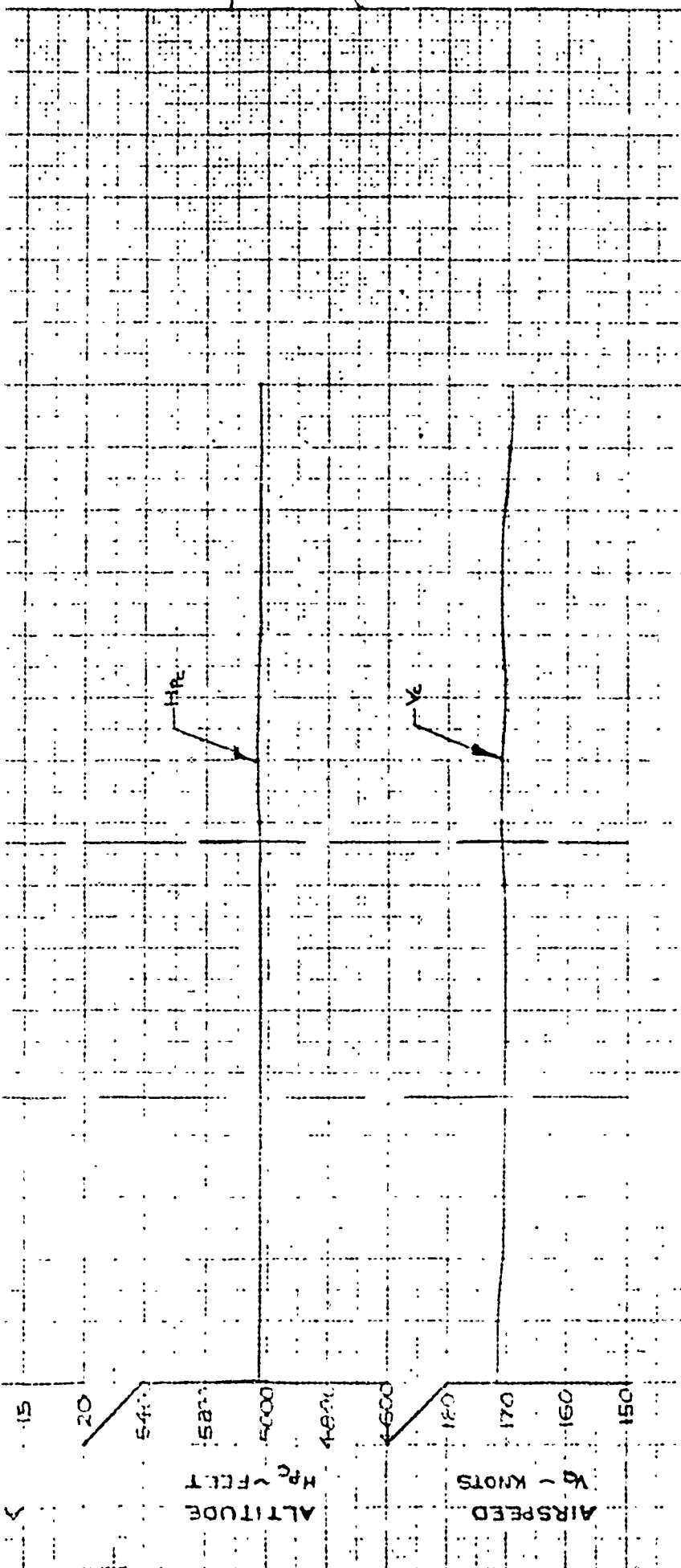
CARGO DESCRIPTION

1. TYPE CARRIER PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3779
VERT. ~ WL174

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 24 FT.
3. RATED CHUTE FORCE / CARGO WT. ~ 114
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE D.34A



600B

AD5166A
REVISED 12-17-65
MBH

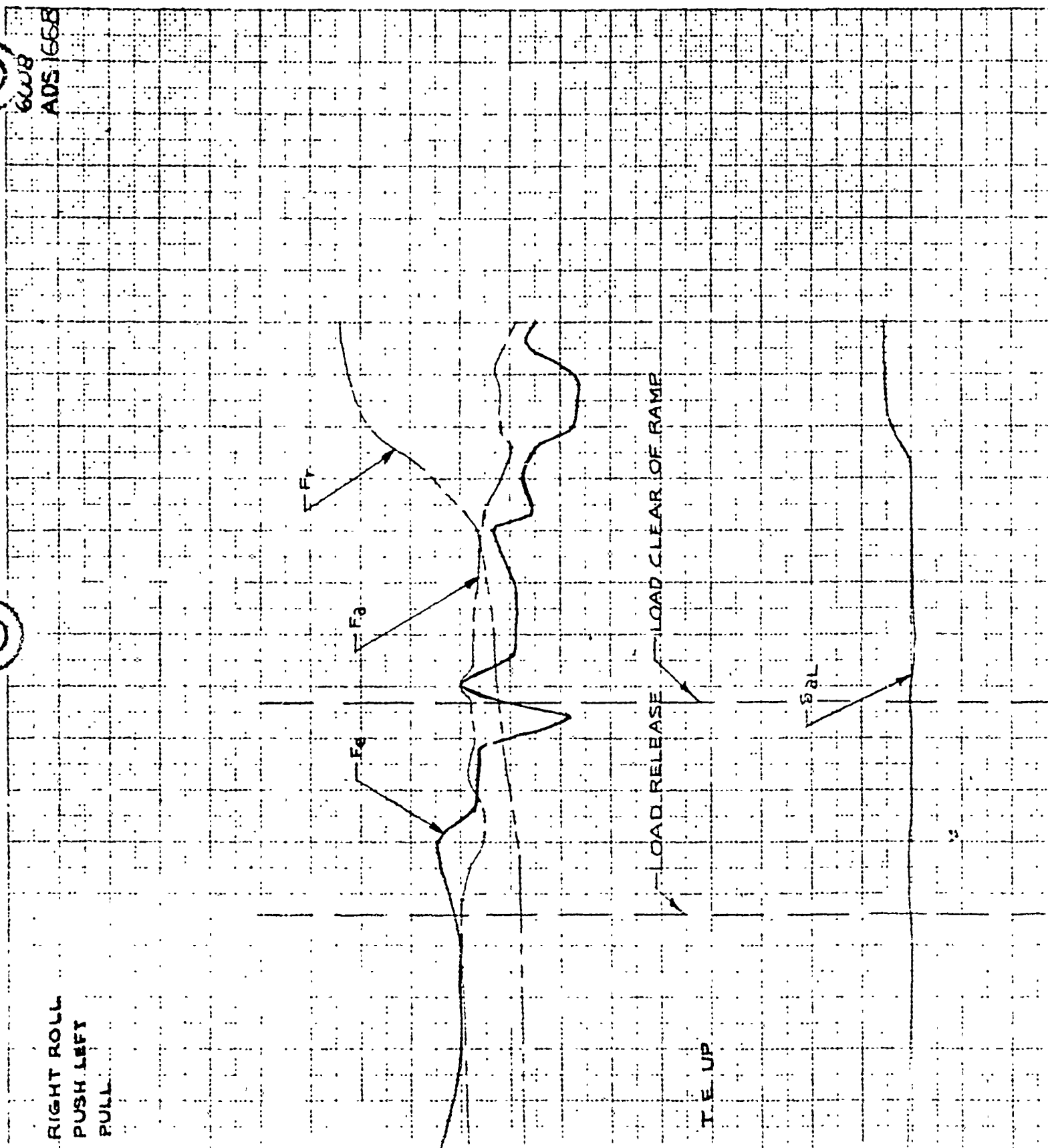
RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40

F_y F_a F_t

20 15 10 5 0 5 10

T.E. UP



6008
ADS 166B

PREPARED BY JDE
DATE 9-15-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-214

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 9-14-65
FLIGHT 183 DROP NO 30
SHEET 2 OF 7
CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-34B SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

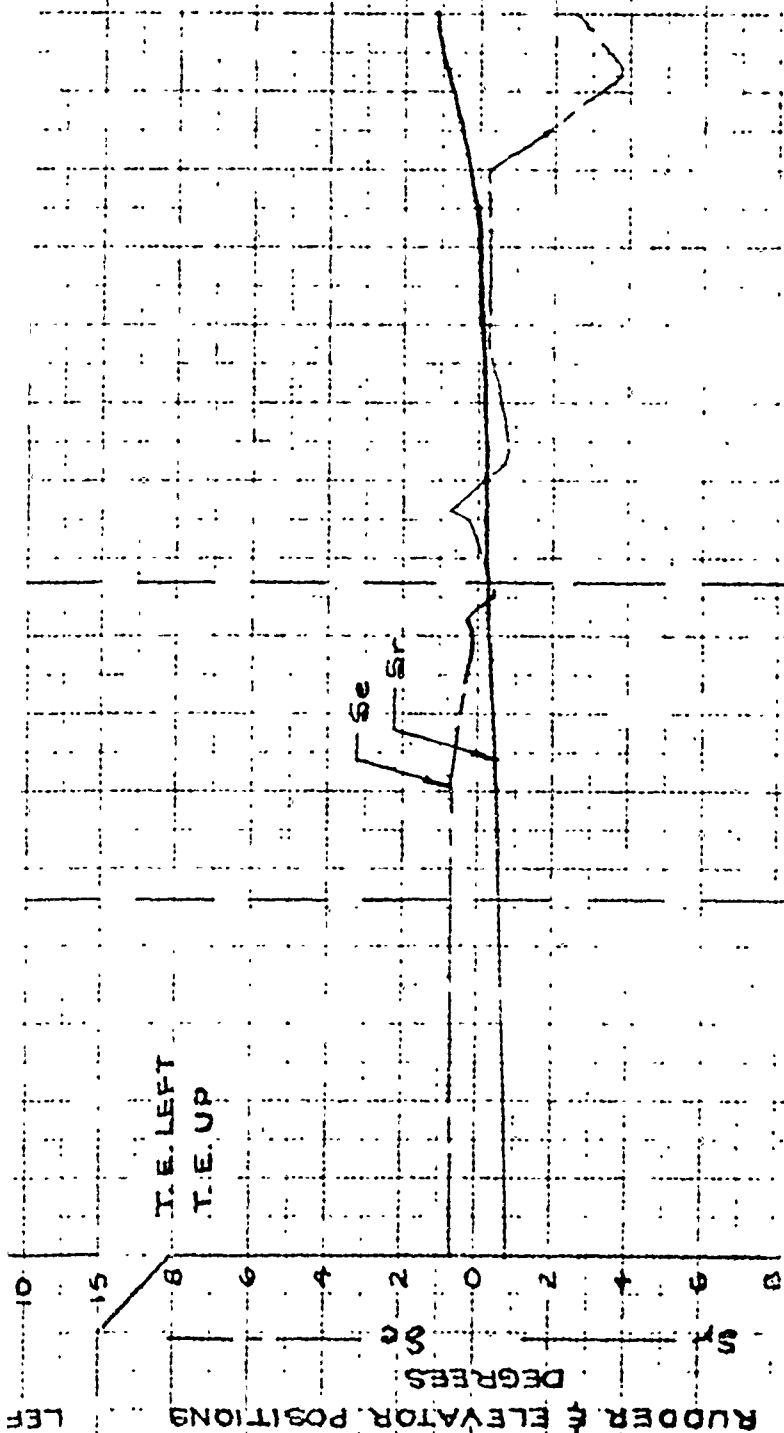


FIGURE D-34B

6008
ADS 166B

6008
ADB-156C

NOTE: $\dot{\theta}$ CALCULATED FROM N₂ DATA

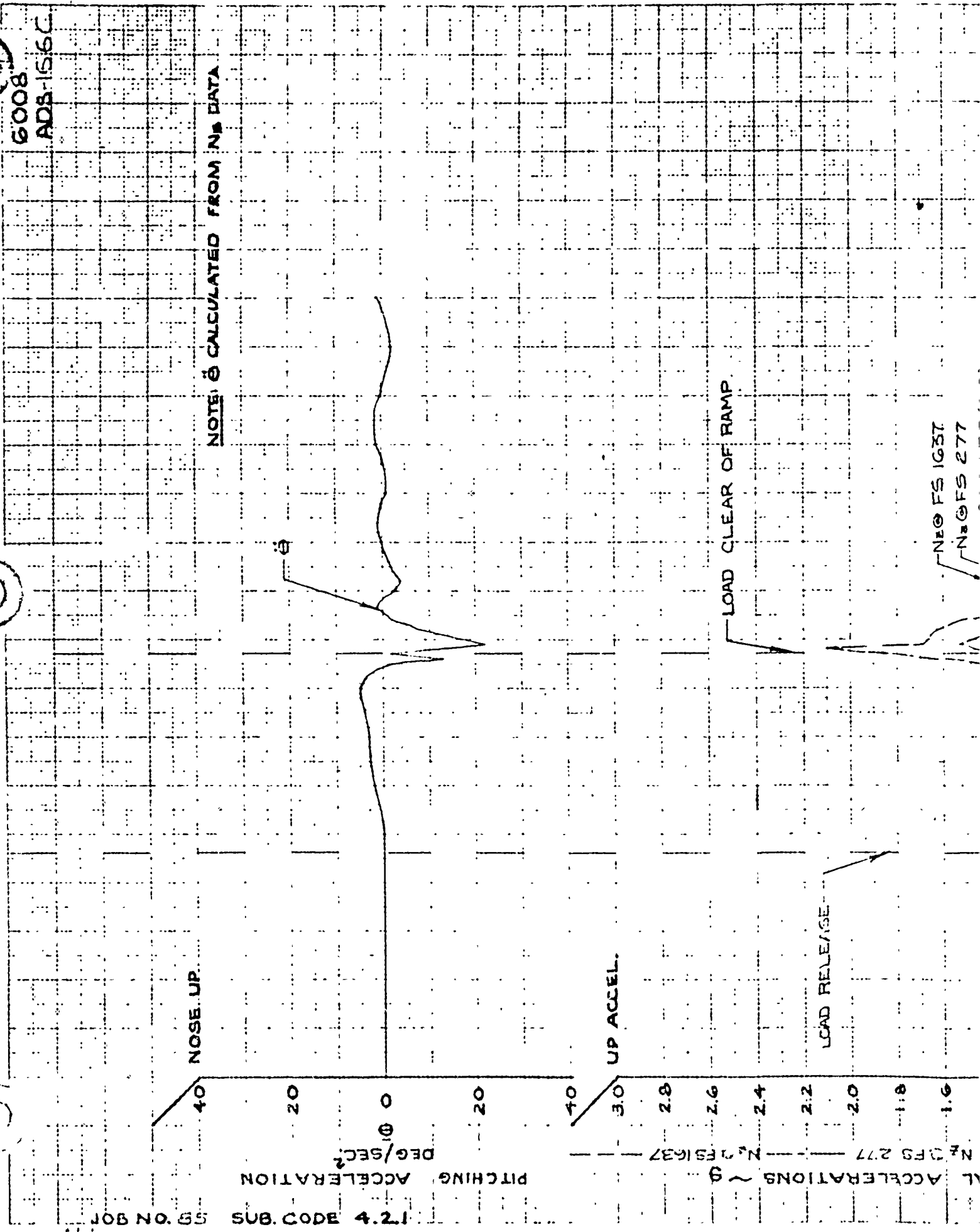
NOSE UP

UP ACCEL.

LOAD RELEASE

LOAD CLEAR OF RAMP

N₂ FS 1637
N₂ FS 277



JOB NO. 65 SUB. CODE 4.2.1

PITCHING ACCELERATION

DEG/SEC²

UP ACCELERATIONS ~ g

N₂ FS 1637

N₂ FS 277

PREPARED BY DTM

DATE 8-14-65

CHECKED BY *fur*

U.S. AIR FORCE RESEARCH AND DEVELOPMENT COMMAND
AEROSPACE MEDICAL CENTER, WRIGHT AIR FORCE BASE, DAYTON, OHIO

REPORT NO. ER 5473

MODEL C-141A

FAE D-215

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 6008

TEST DATE: 8-14-65

FLIGHT 183

DROP NO. 30

SHEET 3 OF 7

CARGO WT. 21,050 LBS

NOTE:

SEE FIGURE D-34A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

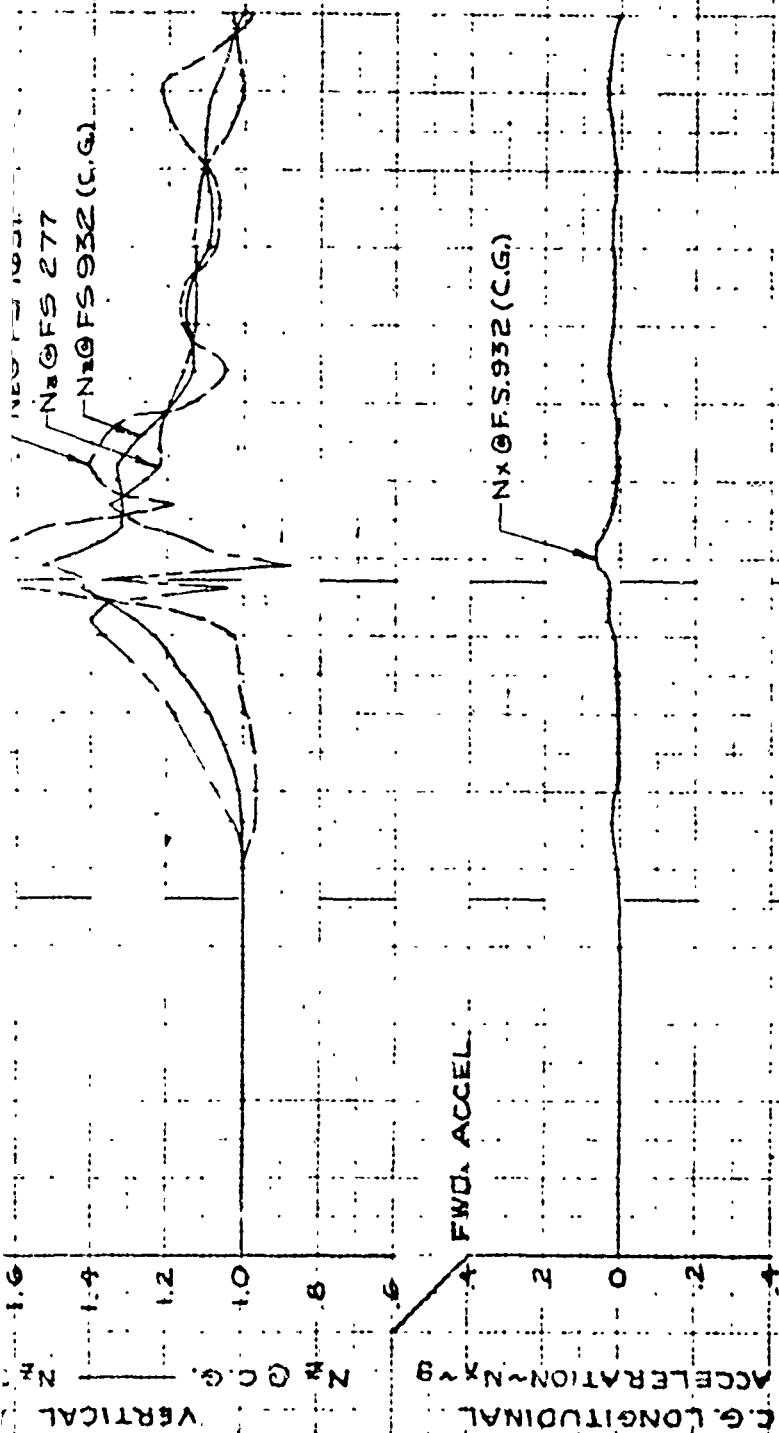


FIGURE D-34C

6008

ADS-125C

6008
ADS 1660

①

②

JOB NO 35 SUB CODE 421

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

1500
1400
1300
1200
1100
1000
900
800
700
600
500

20

1.0

0

RAMP LIP

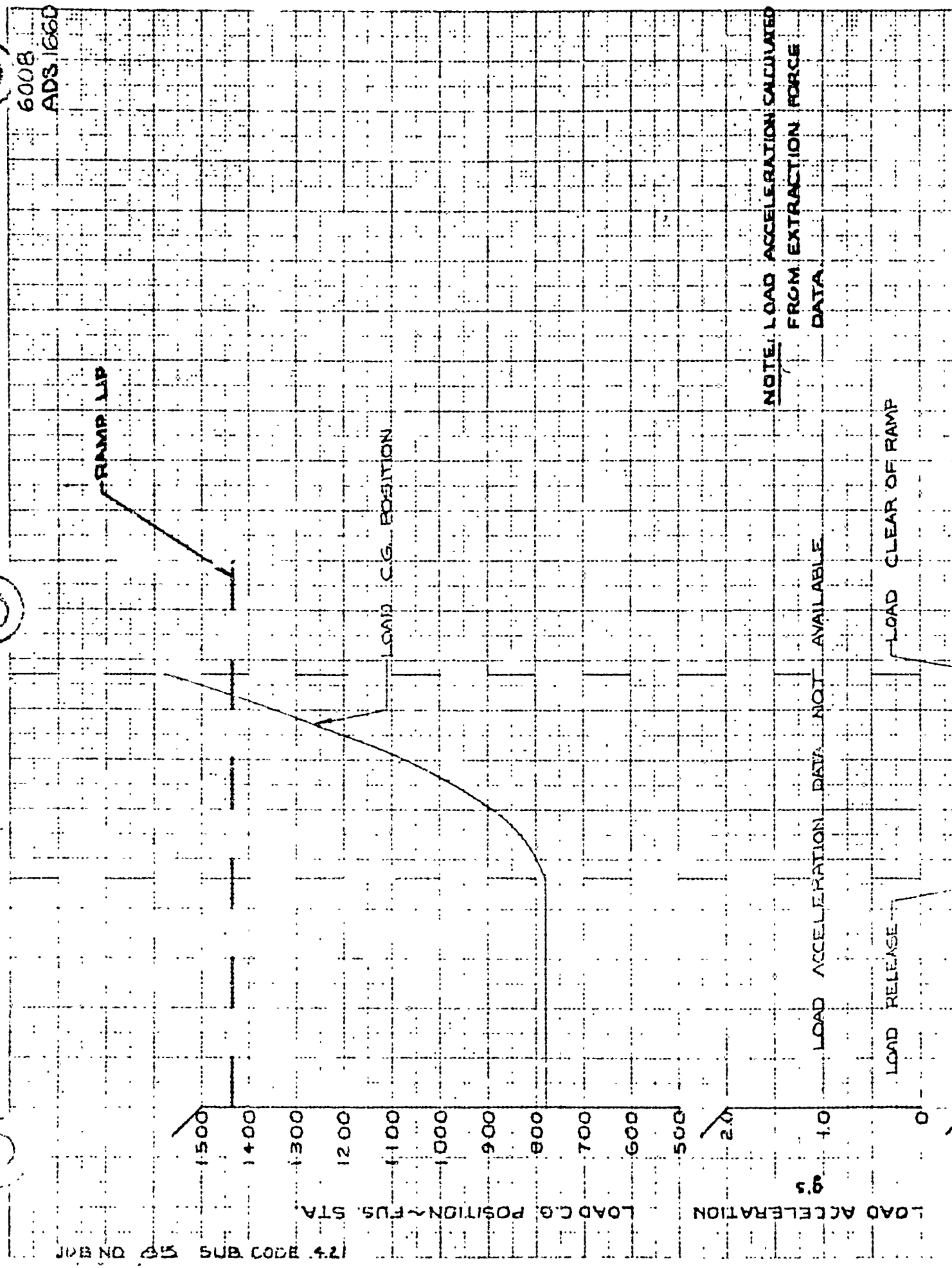
LOAD C.G. POSITION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

LOAD ACCELERATION DATA NOT AVAILABLE

LOAD RELEASE

LOAD CLEAR OF RAMP



PREPARED BY DTM
DATE 9-15-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-216

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 9-14-65
FLIGHT 183 DROP NO. 30

SHEET 4 OF 7

CARGO WT. 21050 LBS.

NOTE:
SEE FIGURE D-34-D, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

EXTRACTION FORCE DATA NOT AVAILABLE

ELAPSED TIME - SEC.

FIGURE D-34-D

EXTRACTION FORCE - LBS. $\times 10^{-3}$

6008
ADS-166D



6008
ADS-166E

JOB NO. 85 SUB. CODE 4.2.1

RAMP ACTUATOR LOAD

TENSION

R.H. $\text{LBS} \times 10^{-3}$
L.H.

4 2 0 -2 -4

L.H. RAMP ACTUATOR

ADS LINK AXIAL LOAD

TENSION

R.H. $\text{LBS} \times 10^{-3}$
L.H.

30 20 10 0

R.H. RAMP ACTUATOR

LOAD RELEASE

LOAD CLEAR OF RAMP

ADS VERTICAL LOAD

PULL DOWN

R.H. $\text{LBS} \times 10^{-3}$
L.H.

15 10 5 0

L.H. SPIDER ARM

R.H. SPIDER ARM

L.H. VERTICAL LOAD

PULL RIGHT

R.H. VERTICAL LOAD

R.H. $\text{LBS} \times 10^{-3}$
L.H.

2.0

PREPARED BY **MBH**
DATE **9-15-65**
CHECKED BY **JWP**

PROPERTY OF THE AIR FORCE
DIVISION OF AERONAUTICS, AIR FORCE RESEARCH

REPORT NO. **ER 5473**
MODEL **C-141A**
PAGE **D-217**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF 63-8077

LAC 6008

TEST DATE: **9-14-65**

FLIGHT **183**

DROP NO. **30**

SHEET **5** OF **7**

CARGO WT. **21,050 LBS.**

NOTE:
SEE FIGURE **D-34A** SHEET **1** OF **7**
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

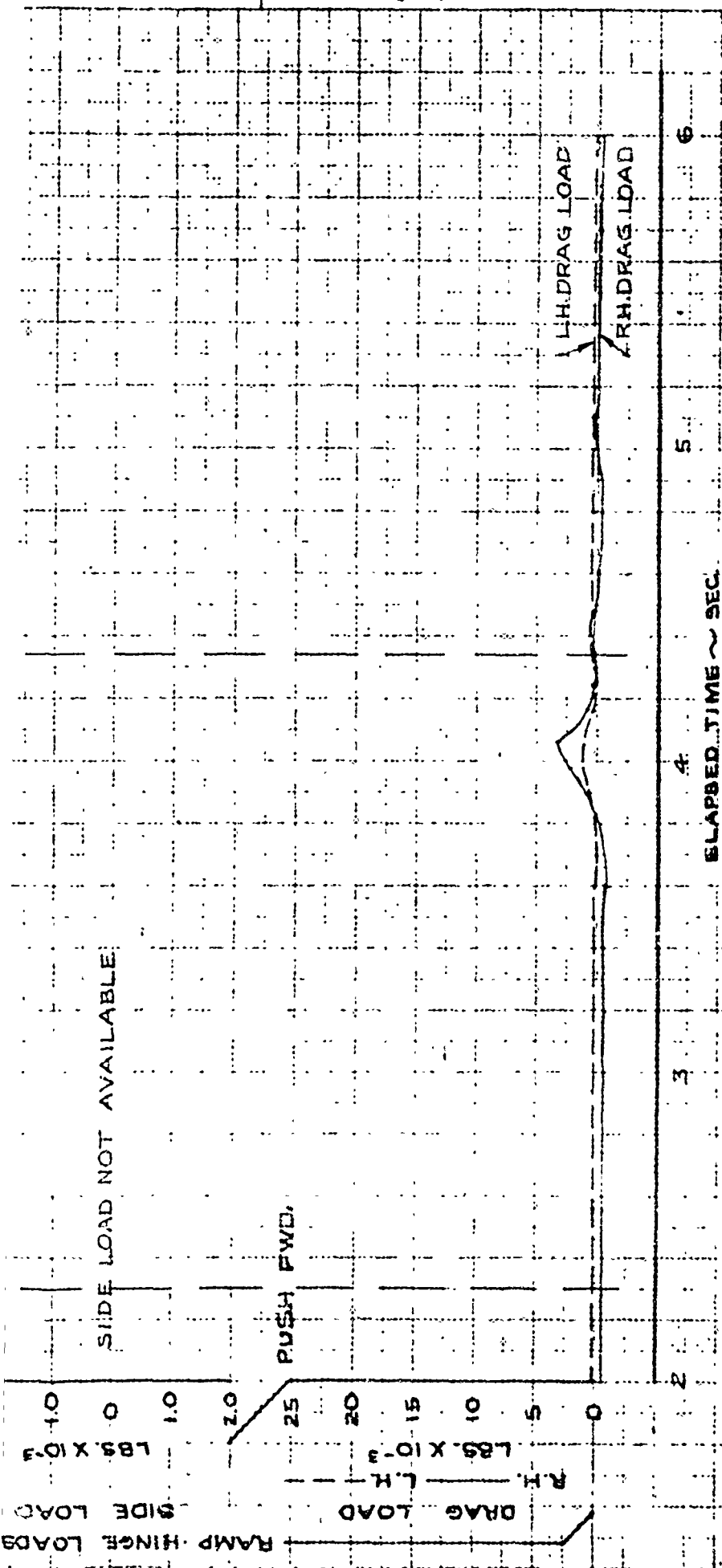


FIGURE **D-34E**

6008
ADS-166E

6008
ADS-1561

COMPRESSION

RH PETAL DOOR ACTUATOR
LH PETAL DOOR ACTUATOR

MYG FS 1565

DOWN LOAD
LOAD RELEASE

LOAD CLEAR OF RAMP

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10⁻³
RH
LH

VERTICAL BENDING ~ FS 1565
INCH-LBS. X 10⁻⁶

JOB NO. 85 SUB CODE 4.2.1

PREPARED BY DTM
DATE 9-19-65
CHECKED BY *fur*

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5472
MODEL C-141A
PAGE D-218

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 9-19-65

FLIGHT 183

DROP NO. 30

SHEET 6 OF 7

CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-34-F SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

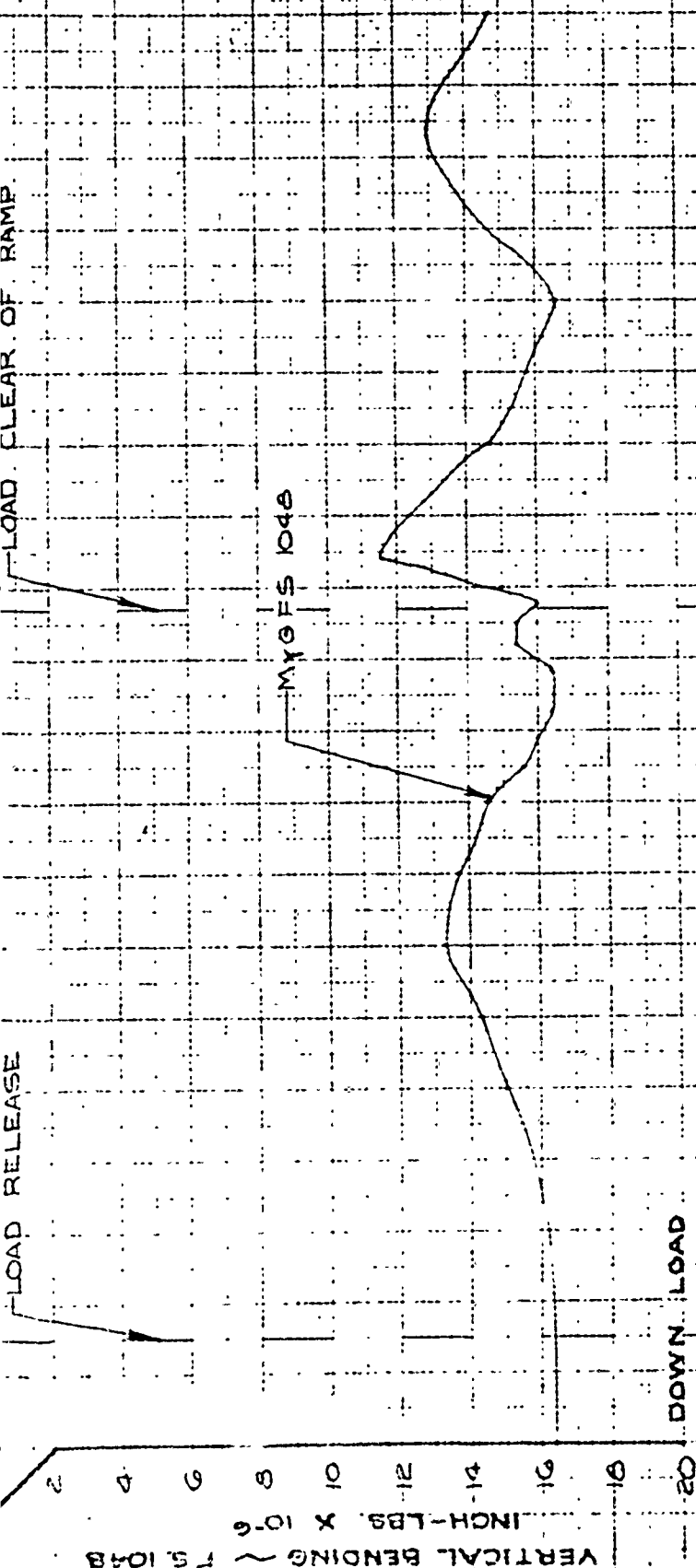


FIGURE D-34-F

6008
ADS-166F

GOODS
ADG-166G

UP LOAD

20

SHEAR @ HBL 44L ~ 10^{-3} LBS

HORIZONTAL STABILIZER NET LOADS

JOB NO. 85 SUB. CODE 4.2.1

52@HBL 44L

UP LOAD

20

BENDING @ HBL 44L ~ 10^{-6} INCH-LBS

MX @ HBL 44L

LOAD RELEASE

LOAD CLEAR OF RAMP

LOAD LEFT @ VS TIP

PREPARED BY DTM
DATE 9-14-65
CHECKED BY Jm

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-219

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-B077 LAC 6008
TEST DATE 9-14-65
FLIGHT 183 DROP NO. 30

SHEET 7 OF 7

CARGO WT. 21,050 LBS.

NOTE:
SEE FIGURE D-34 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

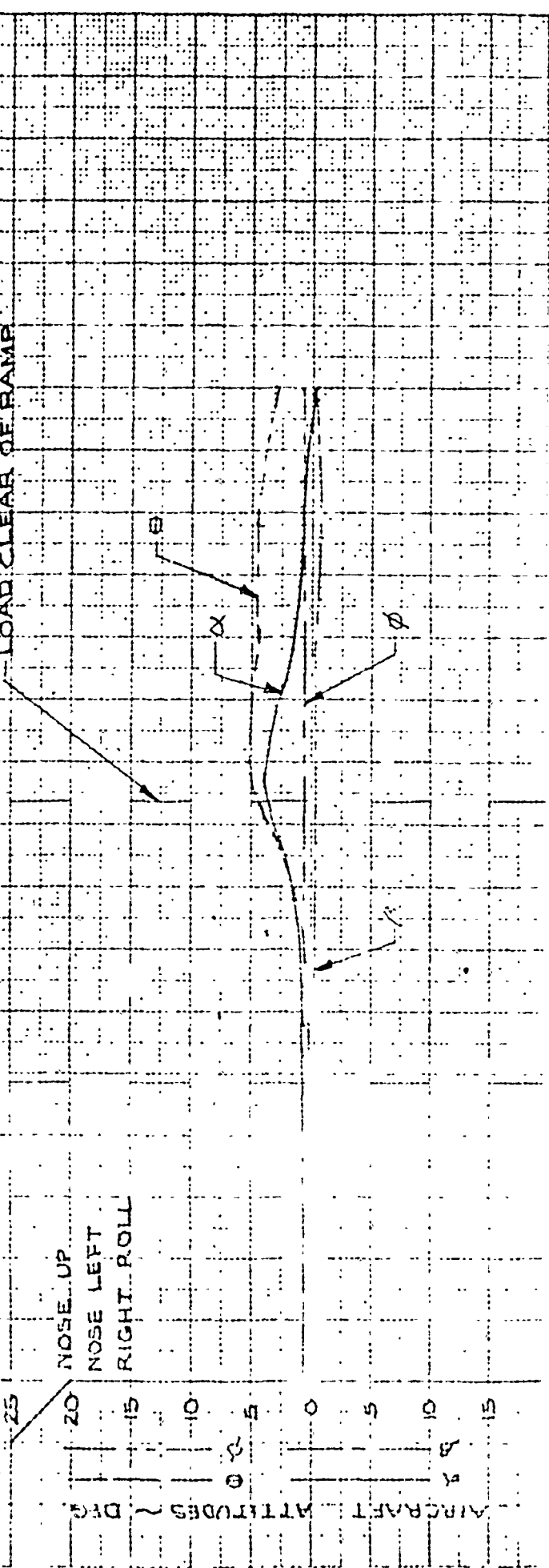
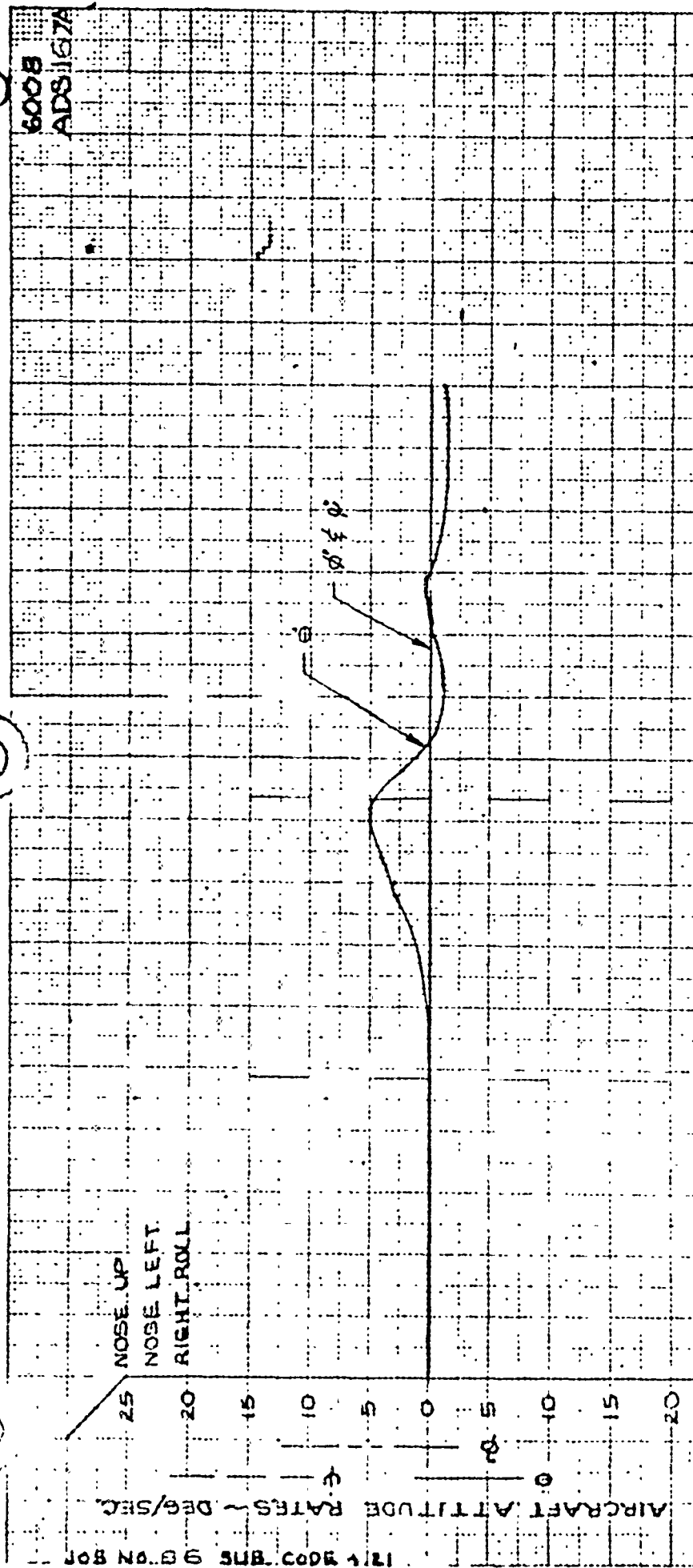
M10 VSS 345

FIGURE D-34 G

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ M10
~ INCH-LBS X 10⁻⁶

6008
ADS-163G

6008
ADS 167A



PREPARED BY JGG
 DATE 9-21-65
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
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REPORT NO ER 5473
 MODEL C-141A
 PAGE D-220

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF838077 LAC 6008
 TEST DATE 9-20-65
 FLIGHT 184 DROP NO. 31

SHEET 1 OF 7

CARGO WT. 21,330 LB.

RUN CONDITIONS

1. G.W. ~ 278,400 LBS.
2. C.G. PRIOR TO DROP ~ 26.7% MAC
3. C.G. AFTER DROP ~ 31.6% MAC
4. FLAPS ~ 5.5%
5. GEAR ~ UP
6. AVG. EPR ~ 1.36
7. α ~ 1.3 DEG. (A/C N.4)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3 ~ 774
 VERT. ~ WL ~ 191

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 24" REEFED TO 18"
3. RATED CHUTE FLOW ~ 1000 WT. C.34
4. EXTRACTION LENGTH ~ 100 FT.

FIGURE D-35A



6008

ADS 07A

REVISED 12-17-65
 MBH

6003
ADS 1618

RIGHT ROLL
PUSH LEFT
FULL

70

60

50

40

30

20

10

0

-10

-20

-30

-40

T.E. UP

20

15

10

5

0

5

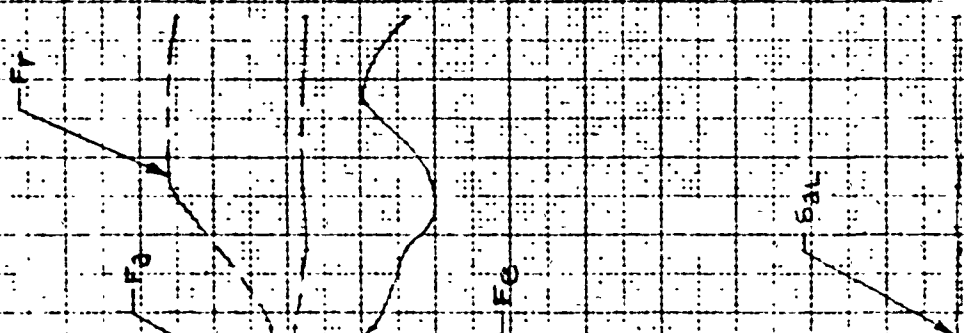
10

15

CONTROL FORCES ~ LBS.

LEFT AILERON POSITION ~ DEG.

12. 2003 INS
SUB. CODE 4.21
NO. 86



PREPARED BY JDG

DATE 9-22-65

CHECKED BY JWP

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-221

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 9-20-65

FLIGHT 184

DROP NO 31

SHEET 2 OF 7

CARGO WT 21,330 LBS.

NOTE:
SEE FIGURE 35 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

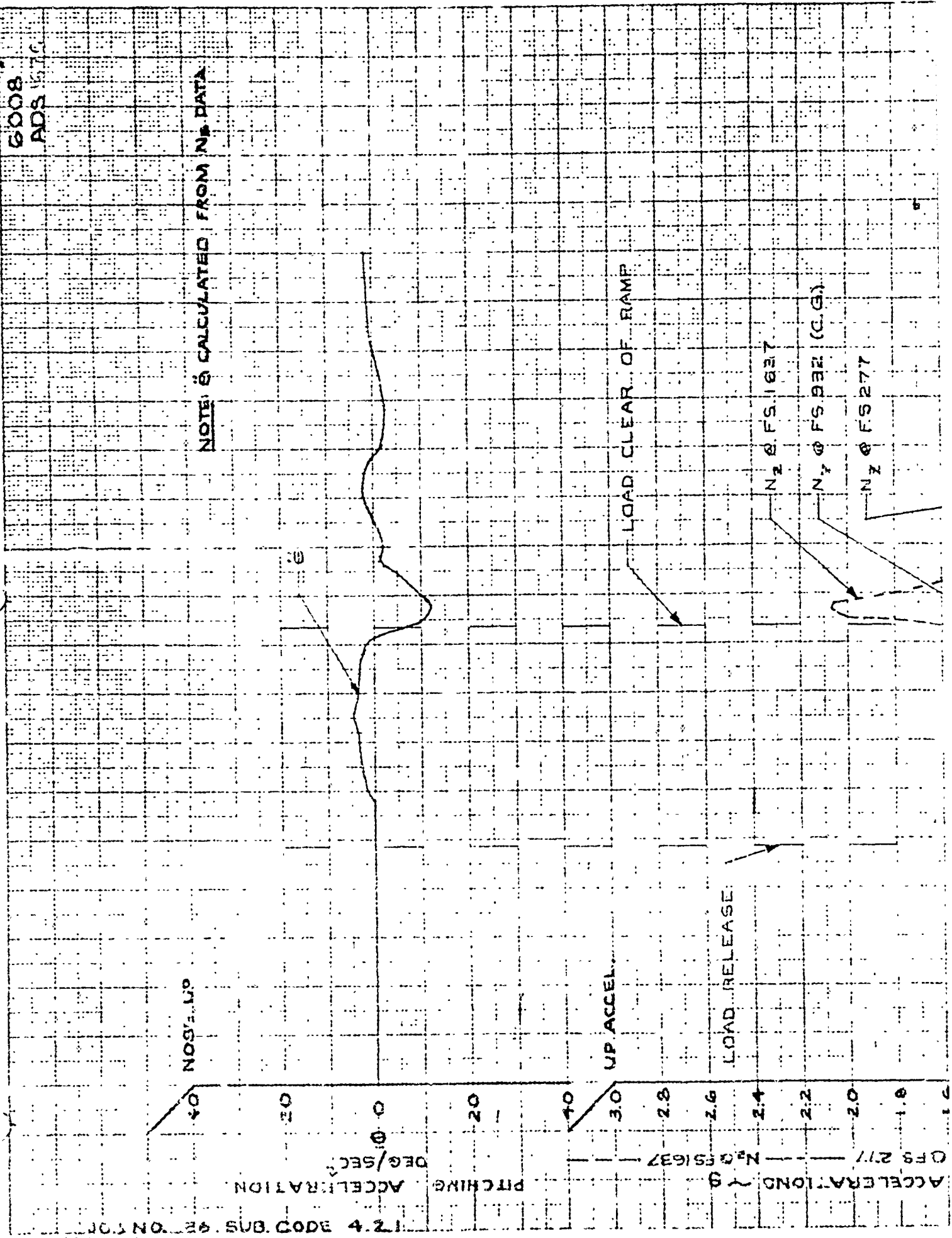
0
1
2
3
4
5
6
7
8
9
10

T.E. LEFT
T.E. UP

DEGREES
RUDDER & ELEVATOR POSITIONS

FIGURE 35

6003
ADS167B



PREPARED BY DTM
 DATE 9-21-68
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. LR 5473
 MODEL C-141A
 PAGE D-222

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AFG3-B077 LAC 6008
 TEST DATE: 9-20-68
 FLIGHT 1B4 DROP NO. 31

SHEET 3 OF 7

CARGO WT. 2,330 LBS

NOTE:
 SEE FIGURE D-35A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

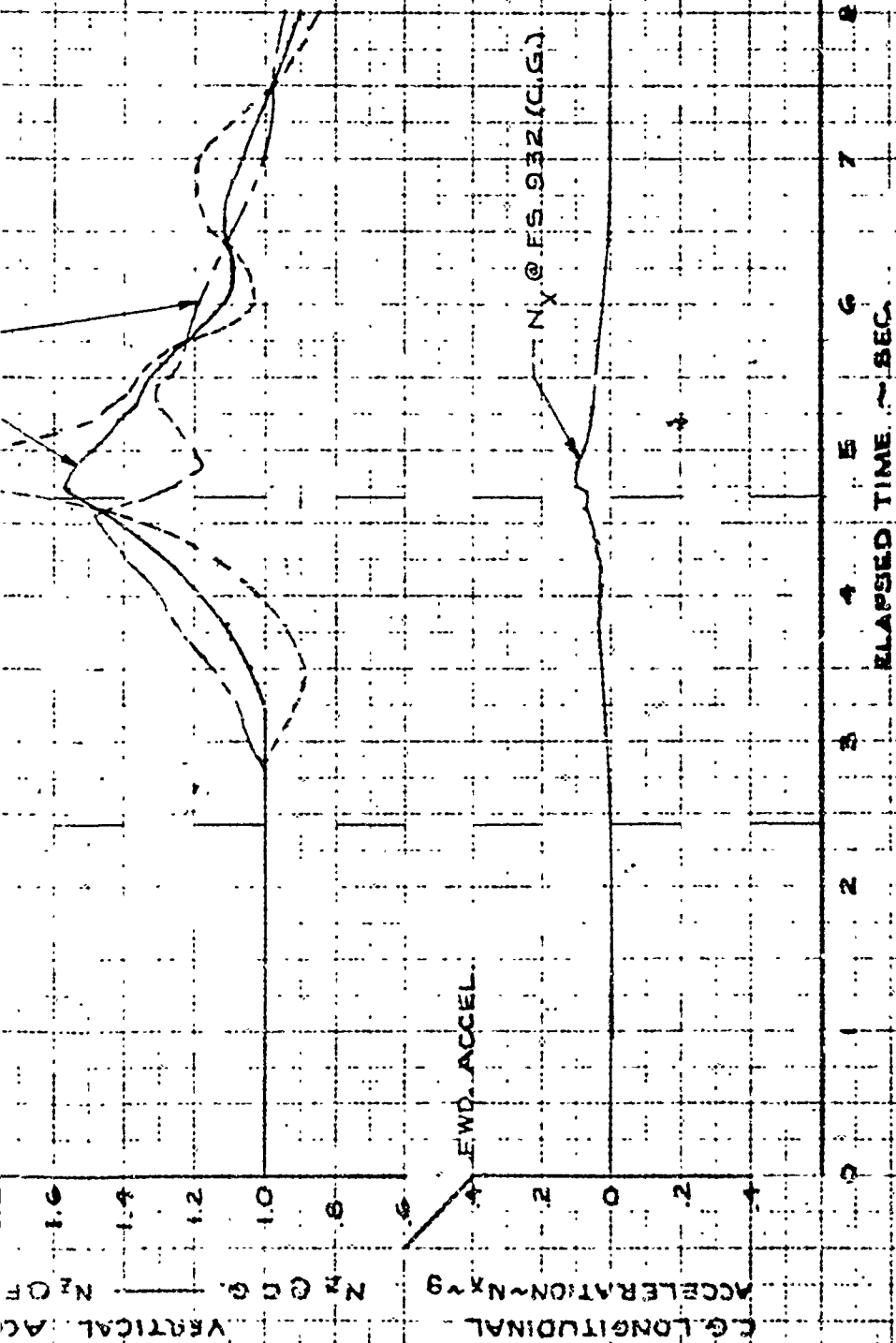


FIGURE D-35C

6008
 ADS 167C

6008
ADS167D

RAMP L/R

LOAD C.G. POSITION

LOAD CLEAR OF RAMP

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

LOAD RELEASE

LOAD C.G. POSITION ~ FUS. STA.
LOAD ACCELERATION
g's



PREPARED BY J06
DATE 9-22-65
CHECKED BY JWP

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A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-223

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008

TEST DATE 9-20-65

FLIGHT 184 DROP NO. 31

SHEET 4 OF 7

CARGO WT. ~21,330 LB.

NOTE:

SEE FIGURE D-35A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

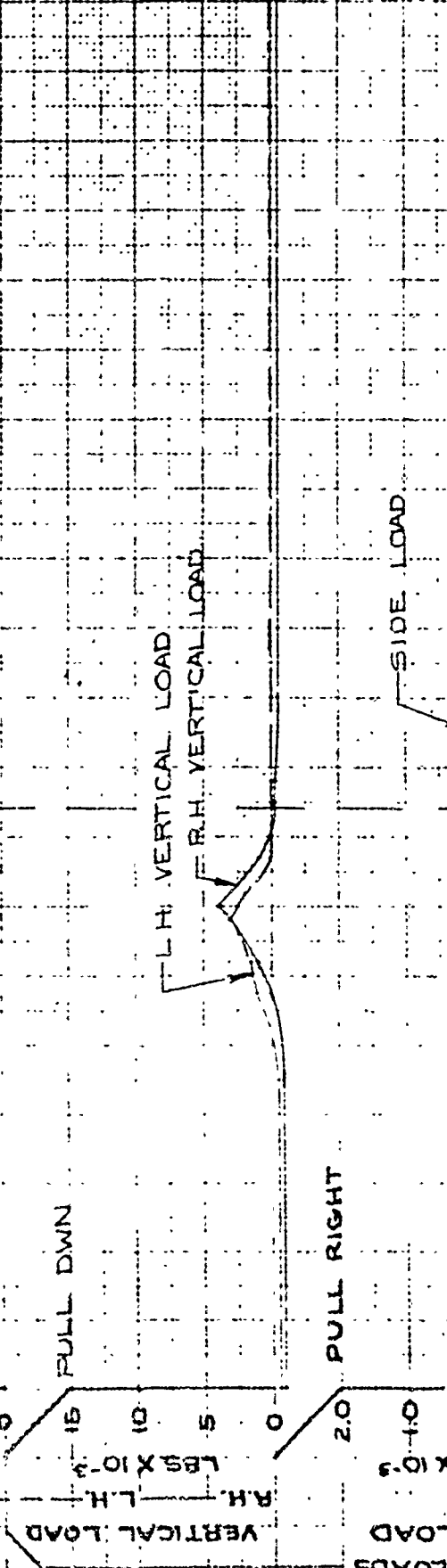
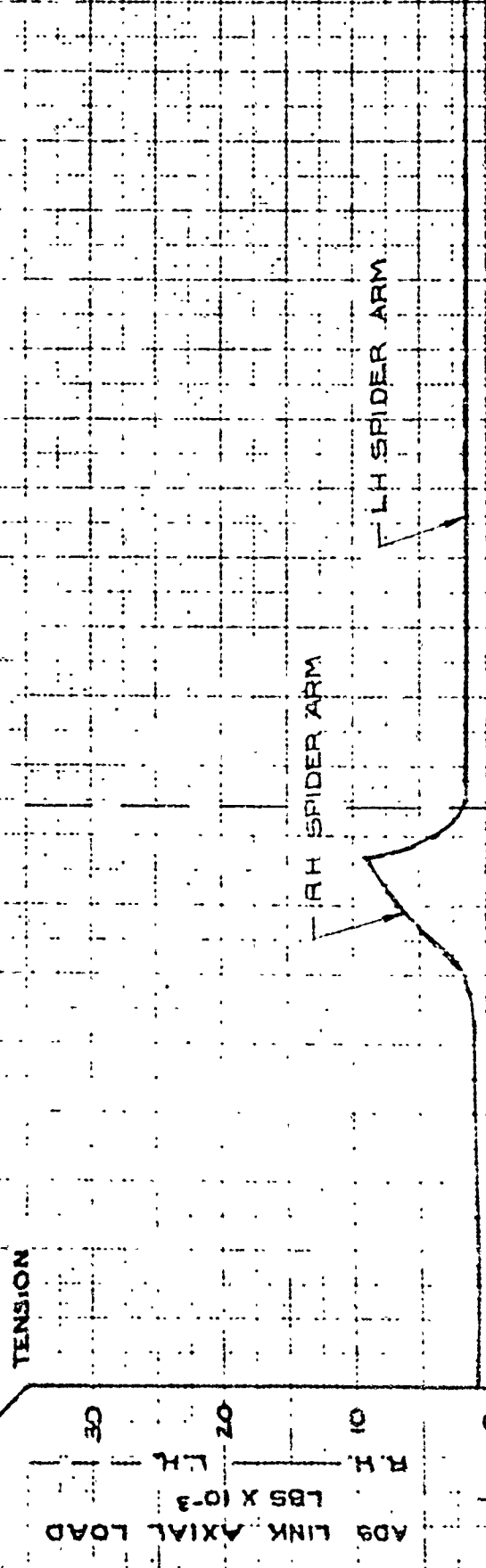
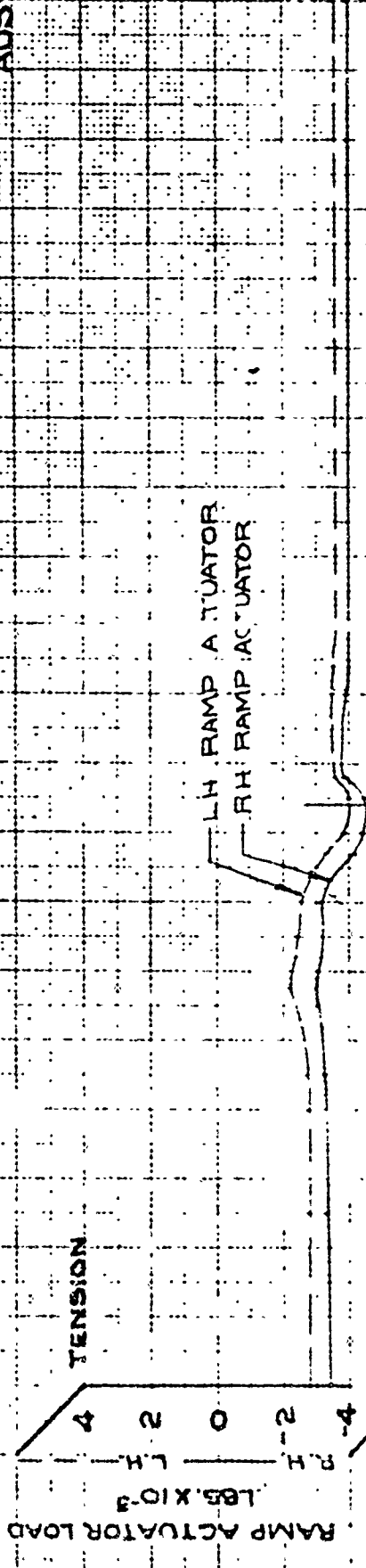
EXT. FORCE

FIGURE D-35D

EXTRACTION FORCE - LBS. $\times 10^3$

6008
ADS 167D

6008
ADS-167E



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A DIVISION OF LOCKHEED & MITCHELL CORPORATION

PAGE D-224

MODEL C-141A

AF 63-8077

1. AC. GDO. 8

TEST DATE: 9-20-65

FLIGHT... 184

DROP NO 3

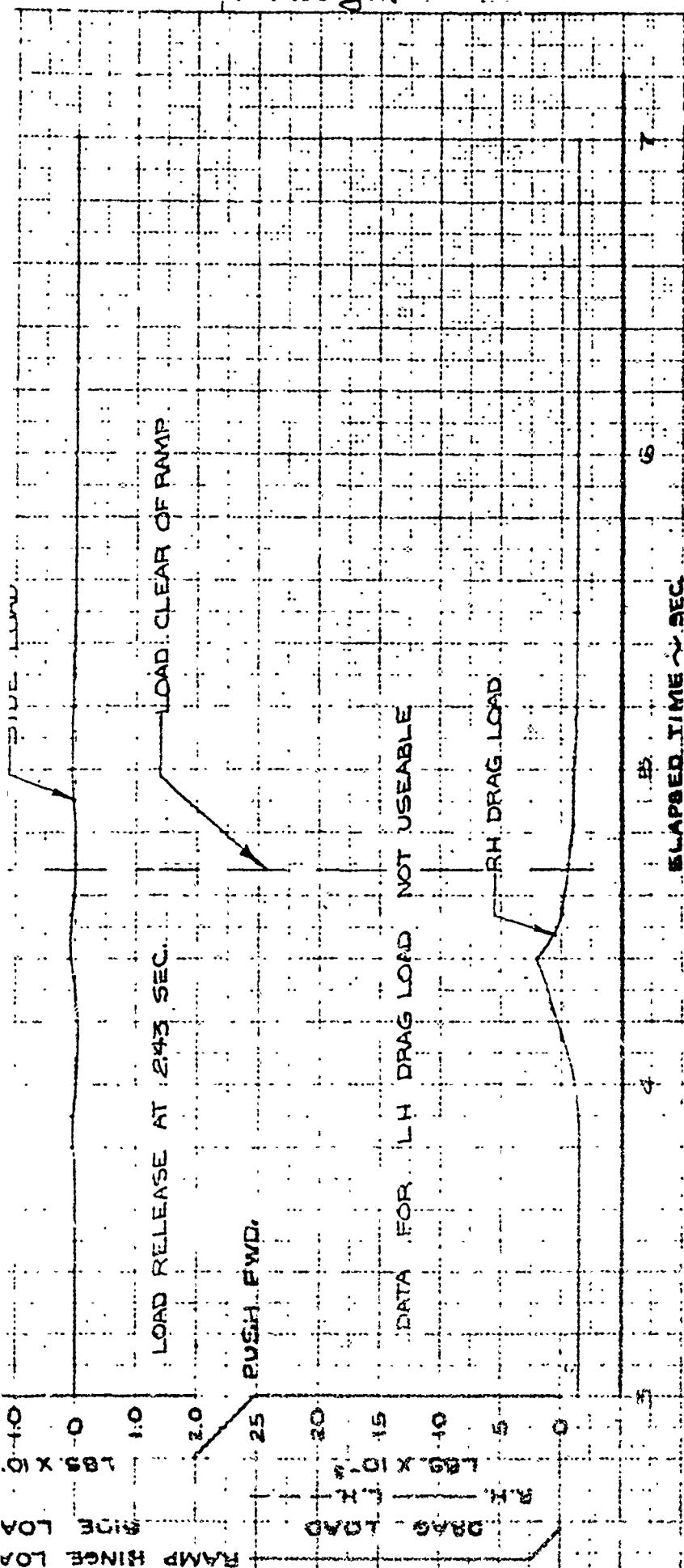
SHEET 3 OF 7

CARGO WT. - 21,330 LBS.

NOTE: SEE FIGURE 35A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.

FIGURE D-5'E

6008
AD5-67E



6008
ADS-167F

COMPRESSION

6

5

4

3

2

1

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

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PREPARED BY MBH
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LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-225

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-8077 LAC 6008
TEST DATE 9-20-65
FLIGHT 189 DROP NO 31

SHEET 6 OF 7

CARGO WT. 21,330 LBS

NOTE:
SEE FIGURE 35A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

LOAD RELEASE AT 2.43 SEC.

W 3 F.S. 104B

ELAPSED TIME - SEC.

DOWN LOAD

VERTICAL BENDING ~ F.S. 104B
INCH-LBS. X 10⁶

FIGURE D-257

6008
ADS 167F

JOB NO. 86 SUB. CODE 4.2.1

HORIZONTAL STABILIZER NET LOADS

SHEAR Q HBL 49L \sim LB X 10^{-3}

BENDING Q HBL 49L \sim INCH-LBS X 10^{-6}

LOADS M_x

UP LOAD

UP LOAD

LOAD LEFT Q VS TIP

LOAD RELEASE AT 2.45 SEC

--S 1/2 @ HBL 49L

M 1/2 @ HBL 49L

LOAD CLEAR OF RAMP

6008
ADSLG7G

PREPARED BY DTM
DATE 9-20-65
CHECKED BY JLP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-226

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 65-2077

LAC 6008

TEST DATE 9-20-65

FLIGHT 134

DROP NO 31

SHEET 7 OF 7

CARGO WT. ~ 21,330 LBS

NOTE:
SEE FIGURE 35A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

LOAD RELEASE AT 2.45 SEC

Mk GVSS 345

VERTICAL STABILIZER NET LOAD
BENDING @ VSS 345 ~ Mk
~ INCH-LBS X 10⁻⁶

FIGURE D-35G

6008
ADSI 67 G

5008
AD310A



PREPARED BY: TED
 DATE: 6-24-65
 CHECKED BY: JWS

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-227

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF838077 LAC 600B

TEST DATE: 6-22-65

FLIGHT ~ 144 DROP NO. ~ 32

SHEET 1 OF 1

CARGO WT. 35,335 LBS.

RUN CONDITIONS

1. G.W. ~ 276,200 LBS.
2. C.G. PRIOR TO DROP ~ 26.8 % MAC
3. C.G. AFTER DROP ~ 20.3 % MAC
4. FLAPS ~ 43%
5. GEAR ~ UP
6. AVG. EPR ~ 1.35 (4 ENGINES) ~ 0.032
7. α ~ 2.2 DEG. (A/C N/U)

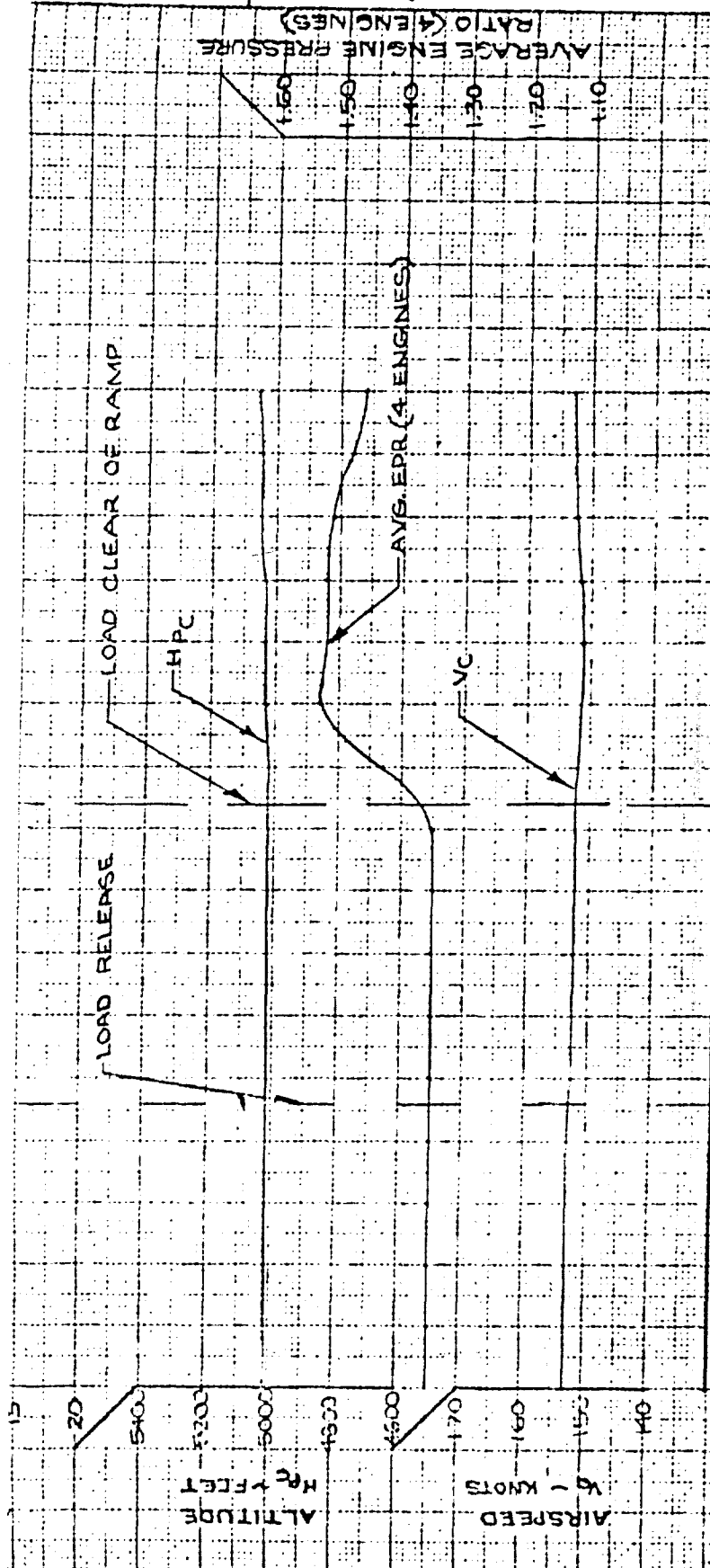
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F5.1090
 VERT. ~ WL 175

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28
3. RATED CHUTE FORCE/CARGO WT. ~ 137
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE D-36A

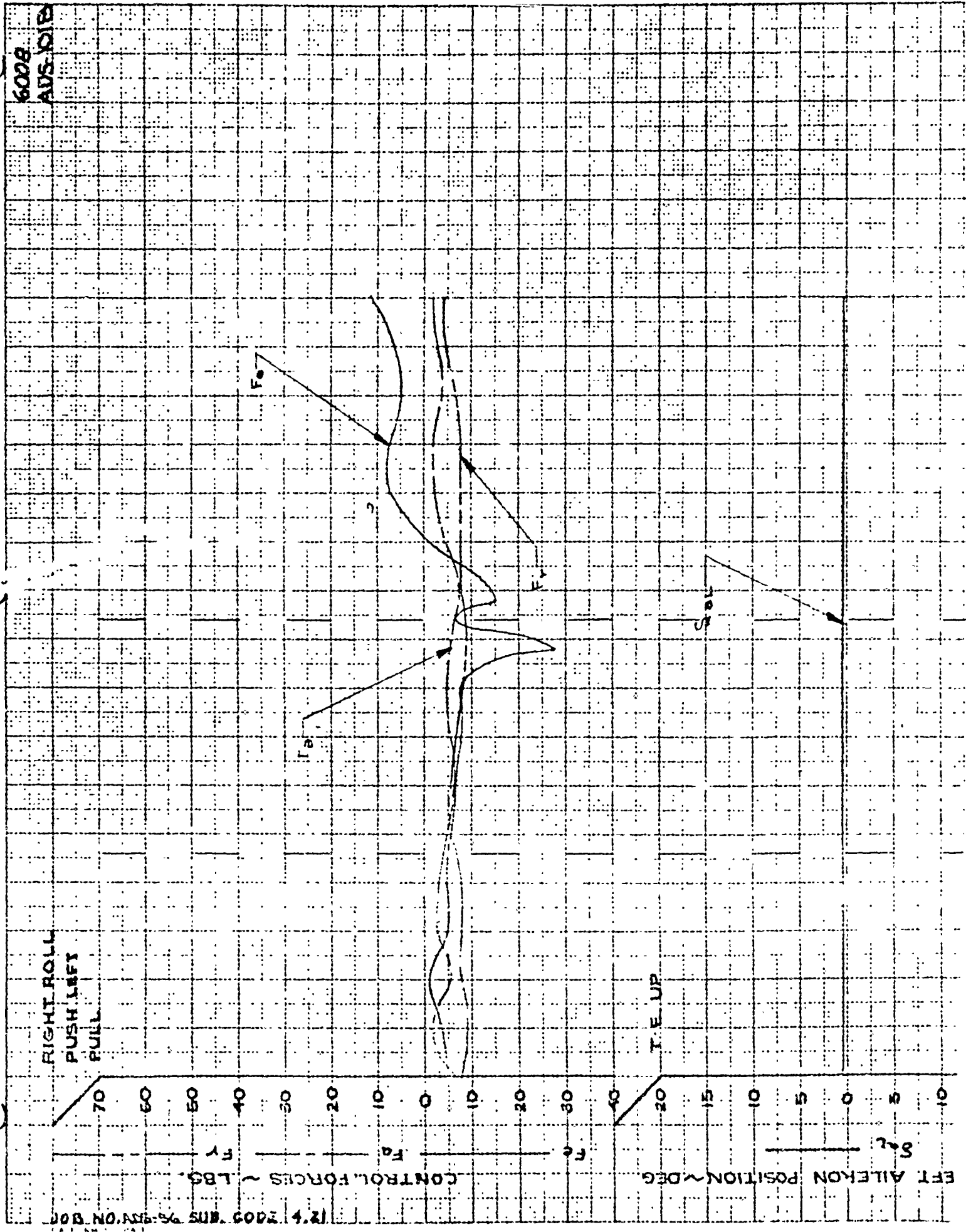


600B

ADS-101A

REVISED 12-15-65
 M8H

6008
ADS-101B



12-1 3409 RNS 5-45-00 000

PREPARED BY **TED.**
 DATE **6-23-66**
 CHECKED BY **JWP**

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **D-228**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**
 AF 63 8077 LAC 6008
 TEST DATE **6-22-66**
 FLIGHT **144** DROP NO **32**
 SHEET **2** OF **3**
 CARGO WT **35,335 LBS.**

NOTE:
 SEE FIGURE **D-35B** SHEET **1** OF **1**
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

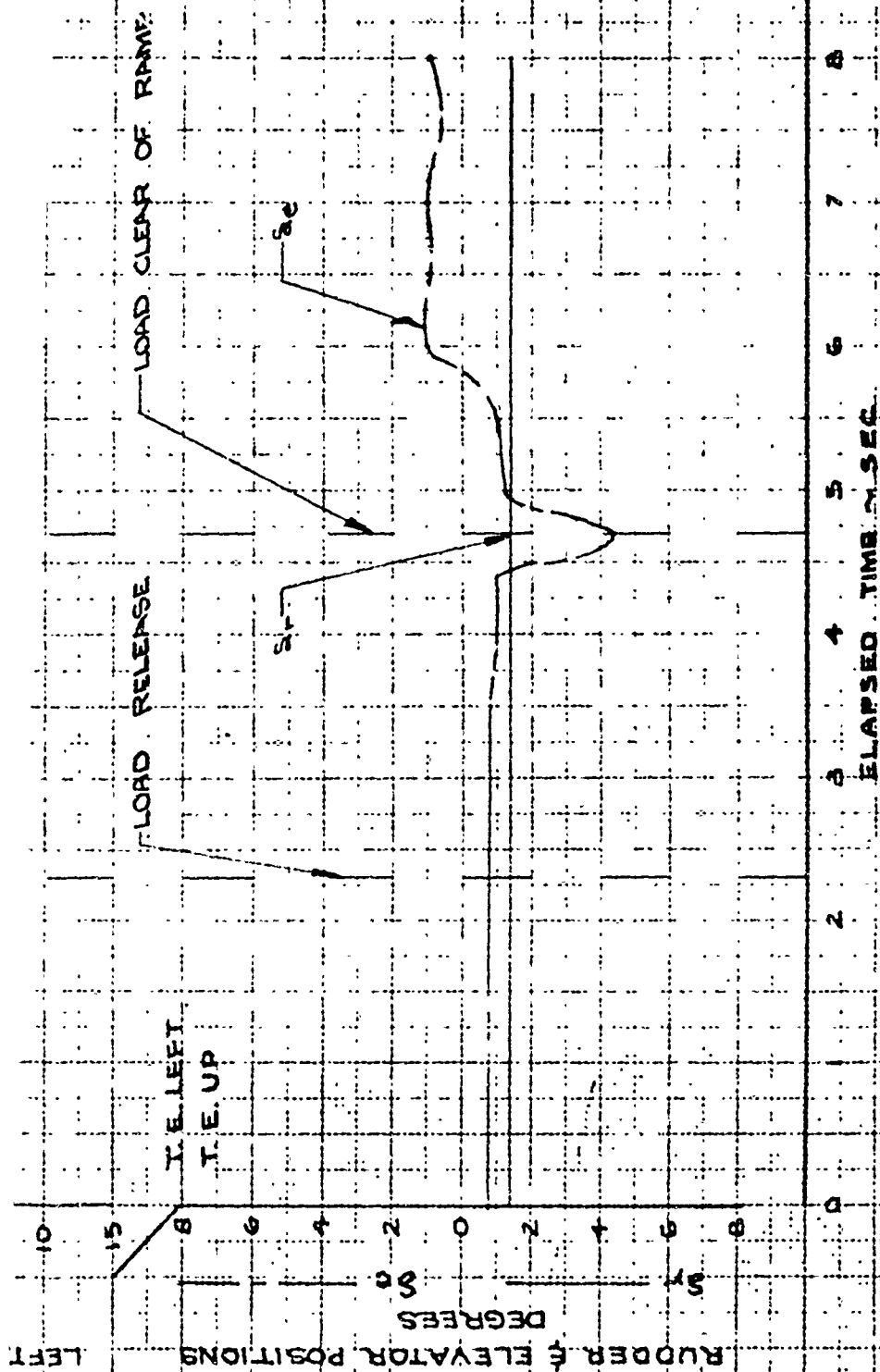
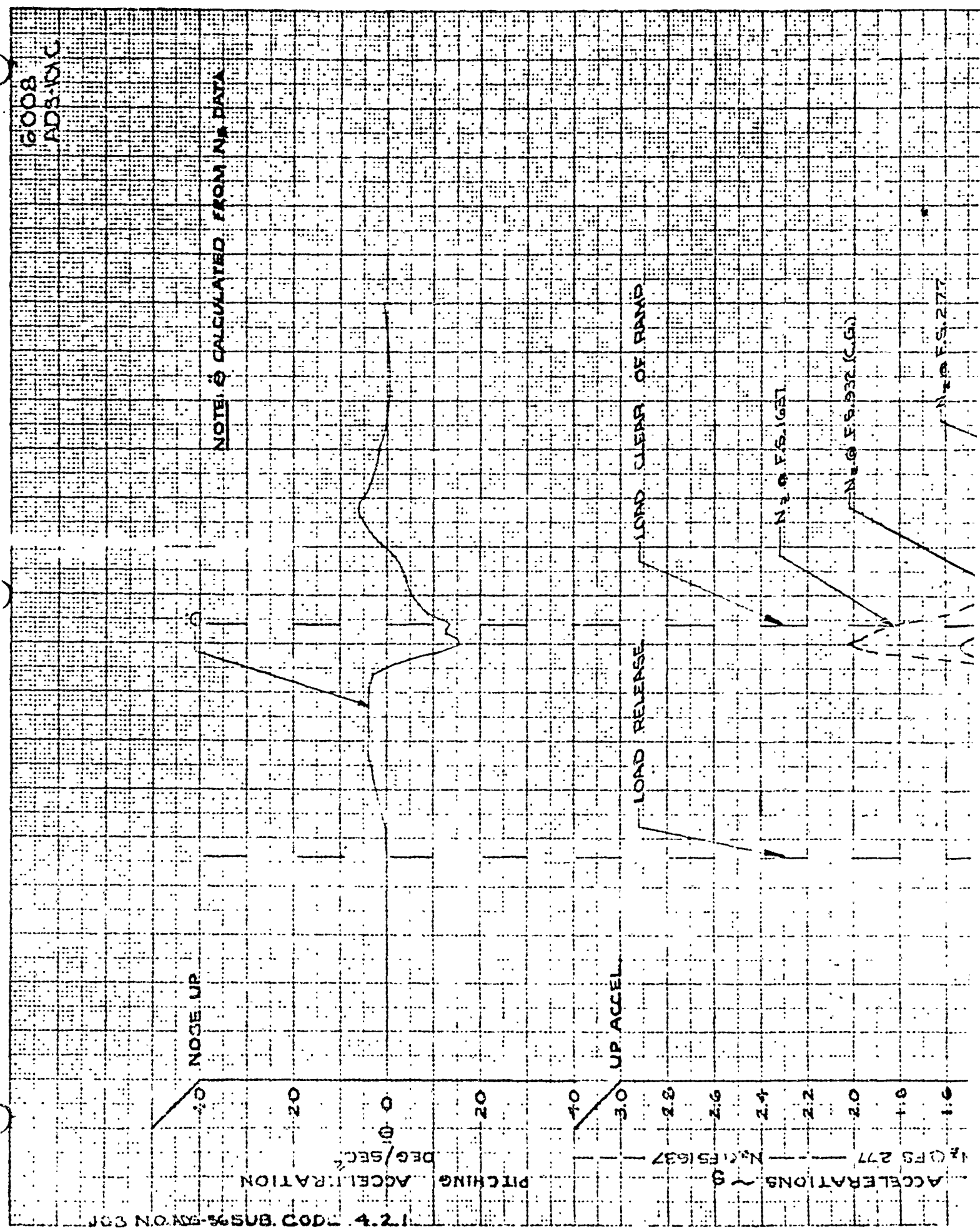


FIGURE D-35B

6008
 ADG-101B

6008
AD3-WAC

NOTE: ϕ CALCULATED FROM INR DATA



JOB NO. AD3-WAC SUB. CODE 4.2.1

PREPARED BY TEB

DATE 6-23-65

CHECKED BY JWP

LOCKHEED-GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-229

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-B077

1 AC 6008

TEST DATE 6-22-65

FLIGHT-144

DROP NO-32

SHEET 3 OF 7

CARGO WT. 35,335 LBS

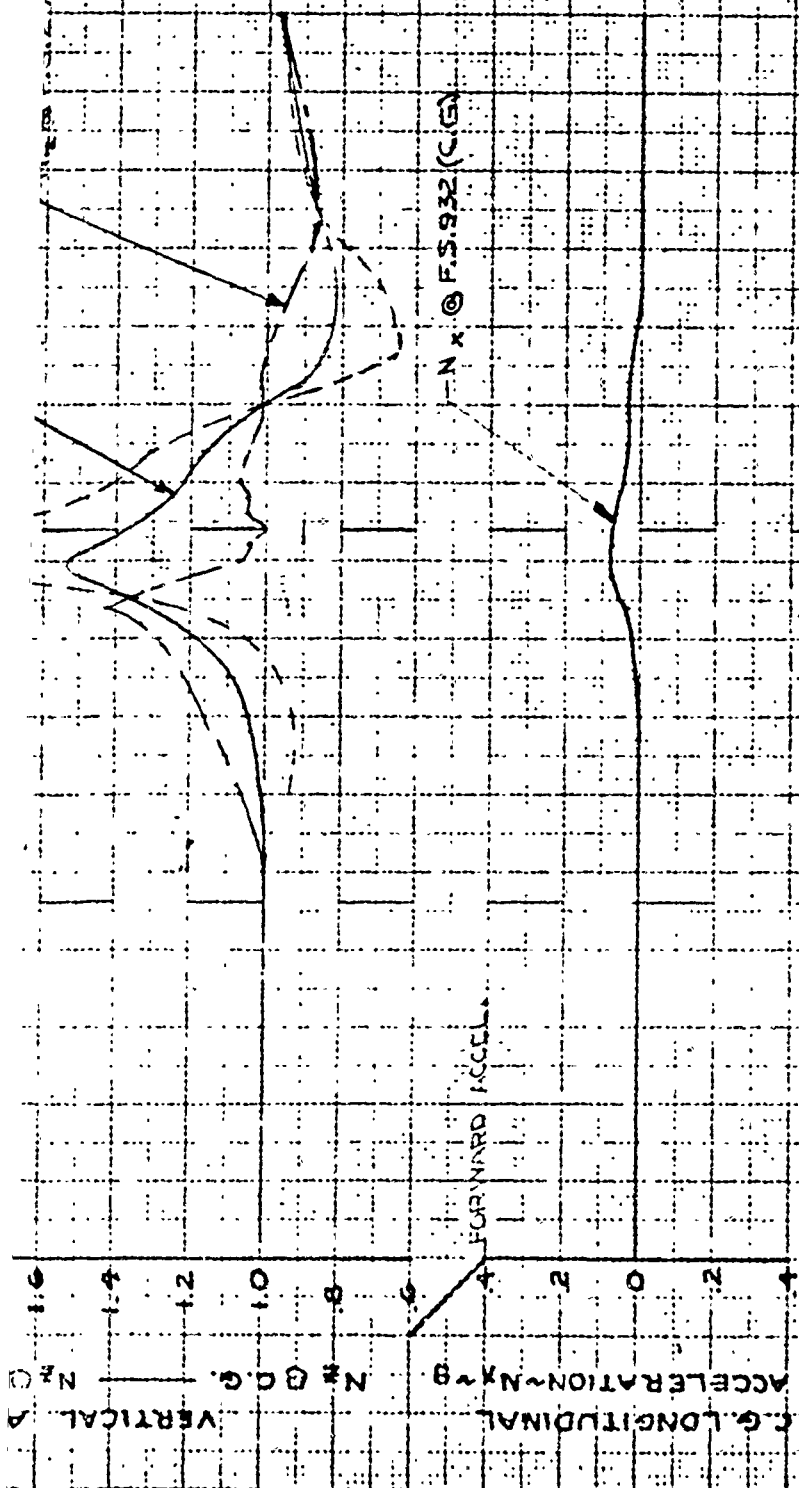
NOTE:

SEE FIGURE D-36 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

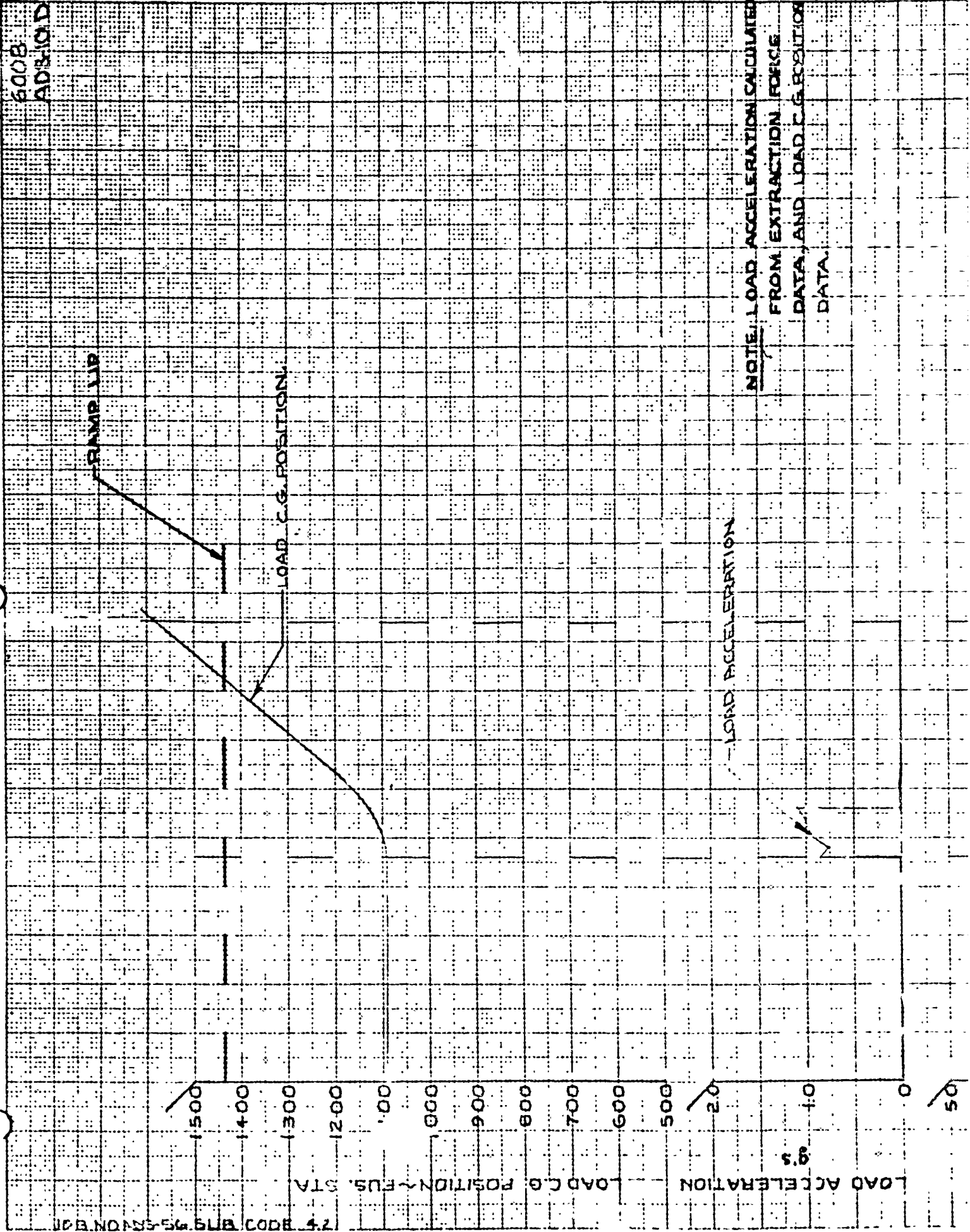
ELAPSED TIME - SEC

FIGURE D-5C

6008
ADS-101C



6008
AD310D



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA, AND LOAD C.G. POSITION
DATA.

JOB NO. 55-56 SUB CODE 42
CA FORM 5-00A 1

PREPARED BY: TED
DATE: 6-23-65
CHECKED BY: JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL: C-242A
PAGE: D-230

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-131A
AF 63-8077 LAC 6008
TEST DATE: 6-22-65
FLIGHT: 144 DROP NO: 132

SHEET 4 OF 7

CARGO WT. 35,335 LBS

NOTE:
SEE FIGURE D-36, SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

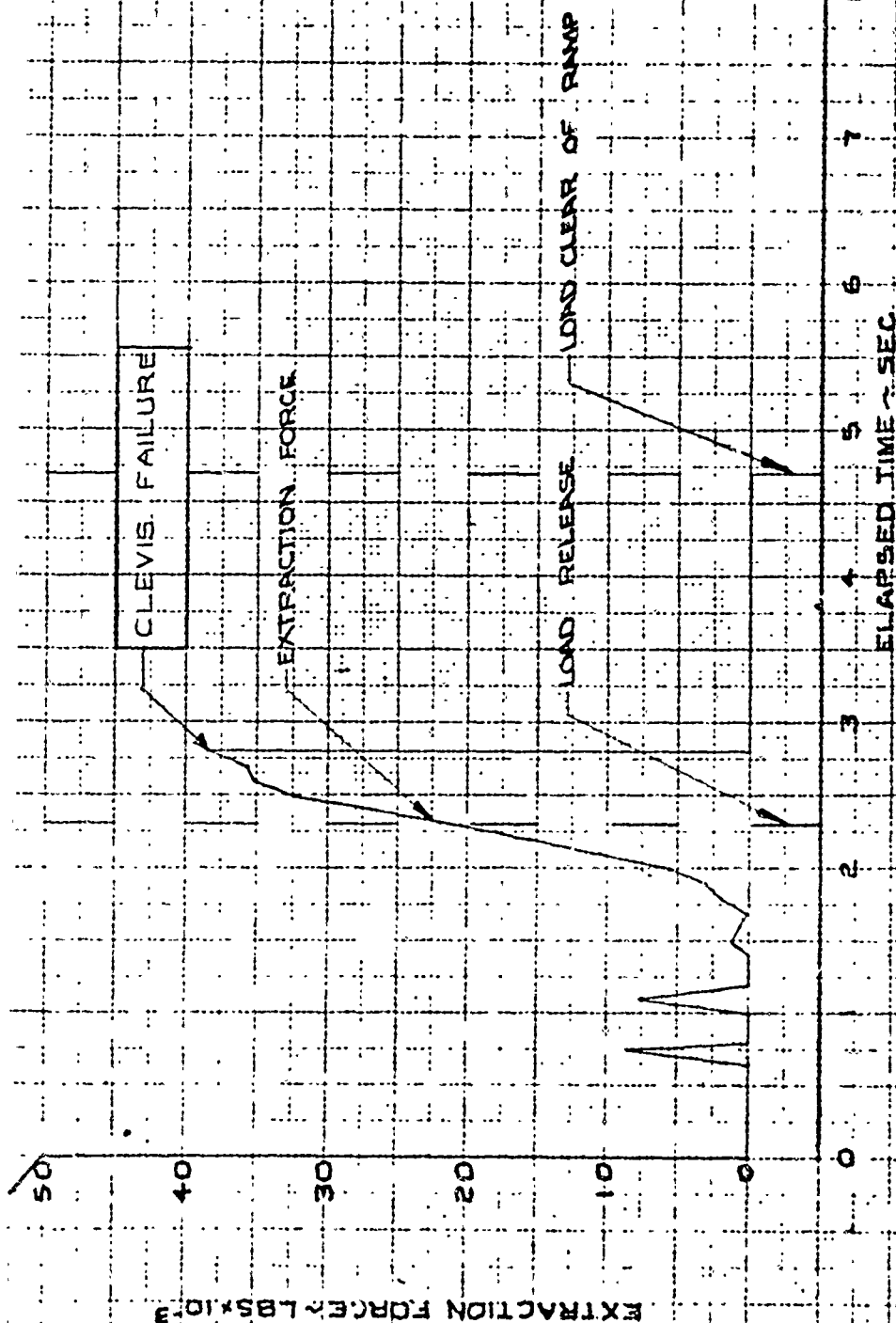
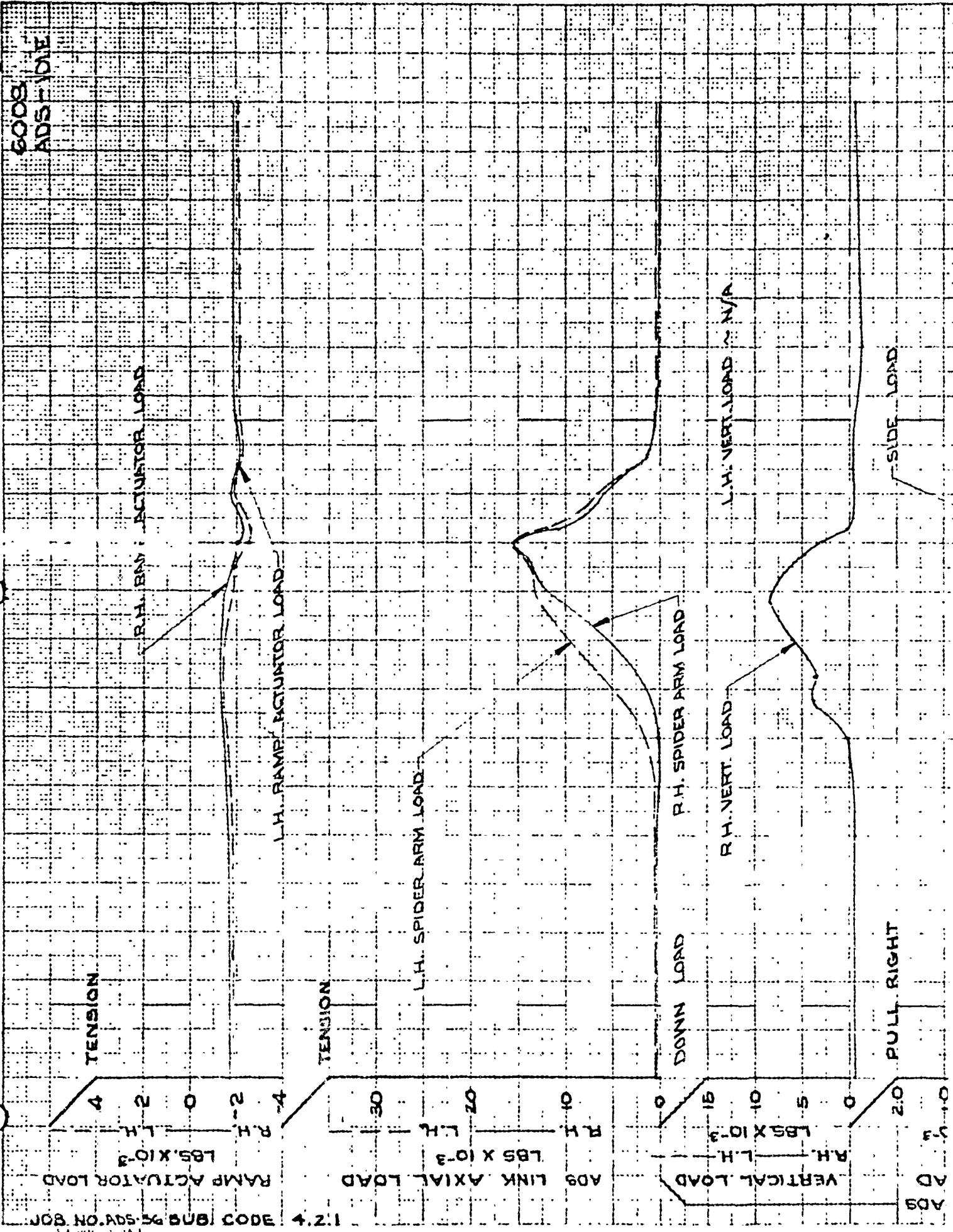


FIGURE D-36D

6008
ADS-101D



PREPARED BY T.E.D.
DATE 6-23-68
CHECKED BY JWP

LOCKHEED MARTIN COMPANY
A DIVISION OF LOCKHEED CORP.

REPORT NO. ER 5473
MODEL C-141A
PAGE D-231

TIME HISTORY OF AERIAL DELIVERY MANGUYER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 6-22-65

FLIGHT 144

DROP NO. 32

SHEET 5 OF 7

CARGO WT. 35,335 LBS

NOTE:
SEE FIGURE D-36A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

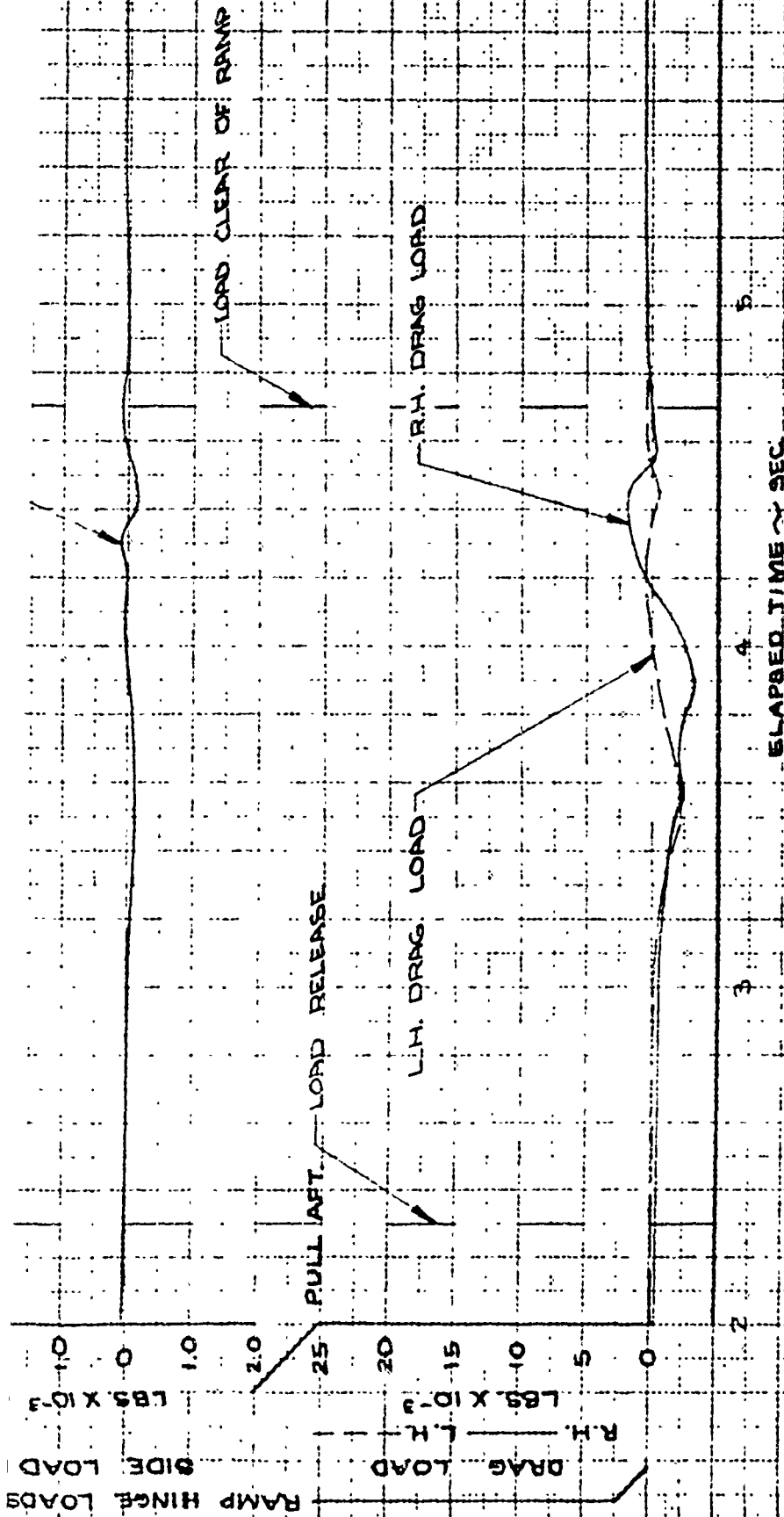
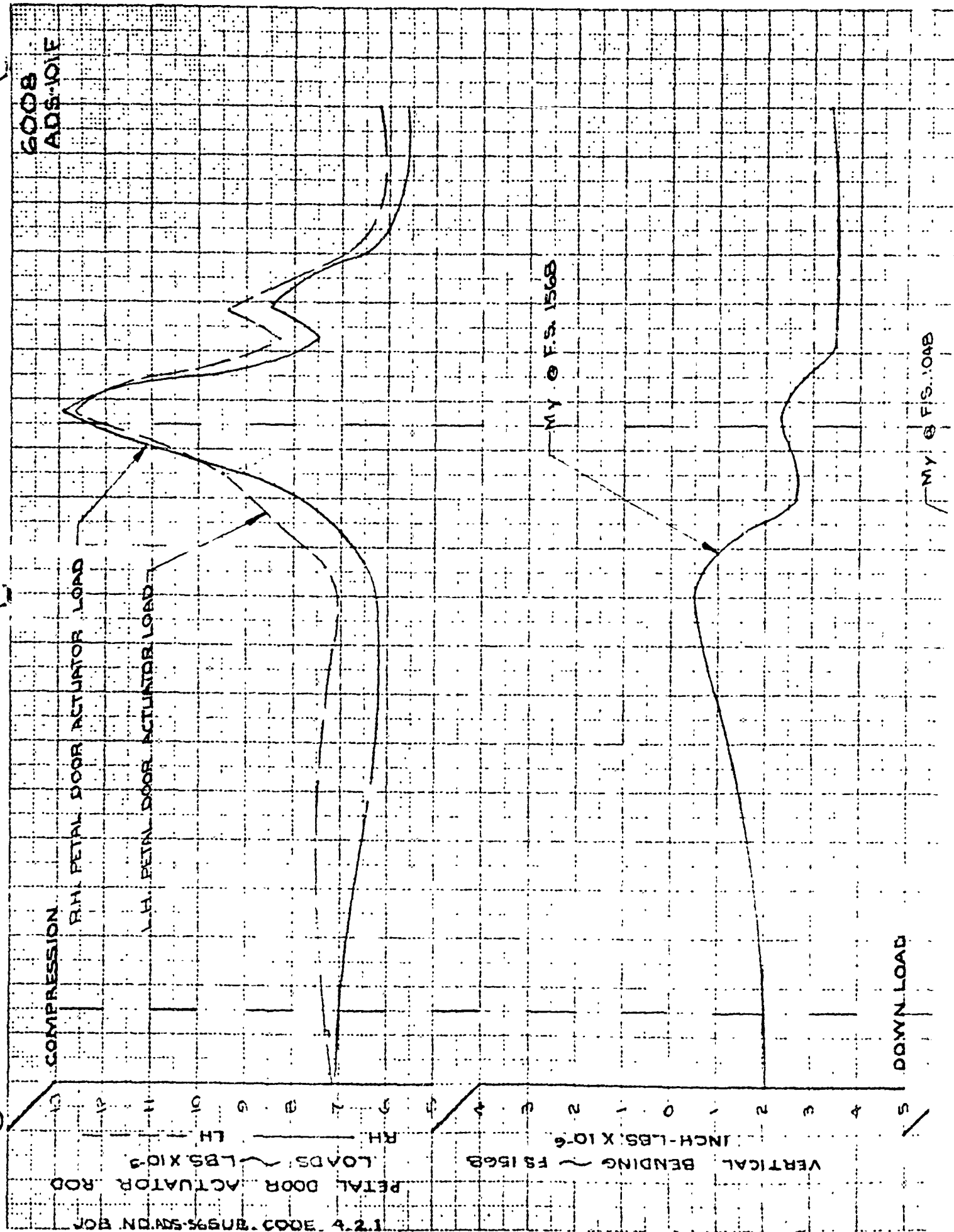


FIGURE D-35E

6008
ADS-101E



NOT TO SCALE



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF65-B077 LAC 6008
TEST DATE 6-22-68
FLIGHT 144 DROP NO 32

SHEET 6 OF 7

CARGO WT. 35,335 LB

NOTE:
SEE FIGURE D-30 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

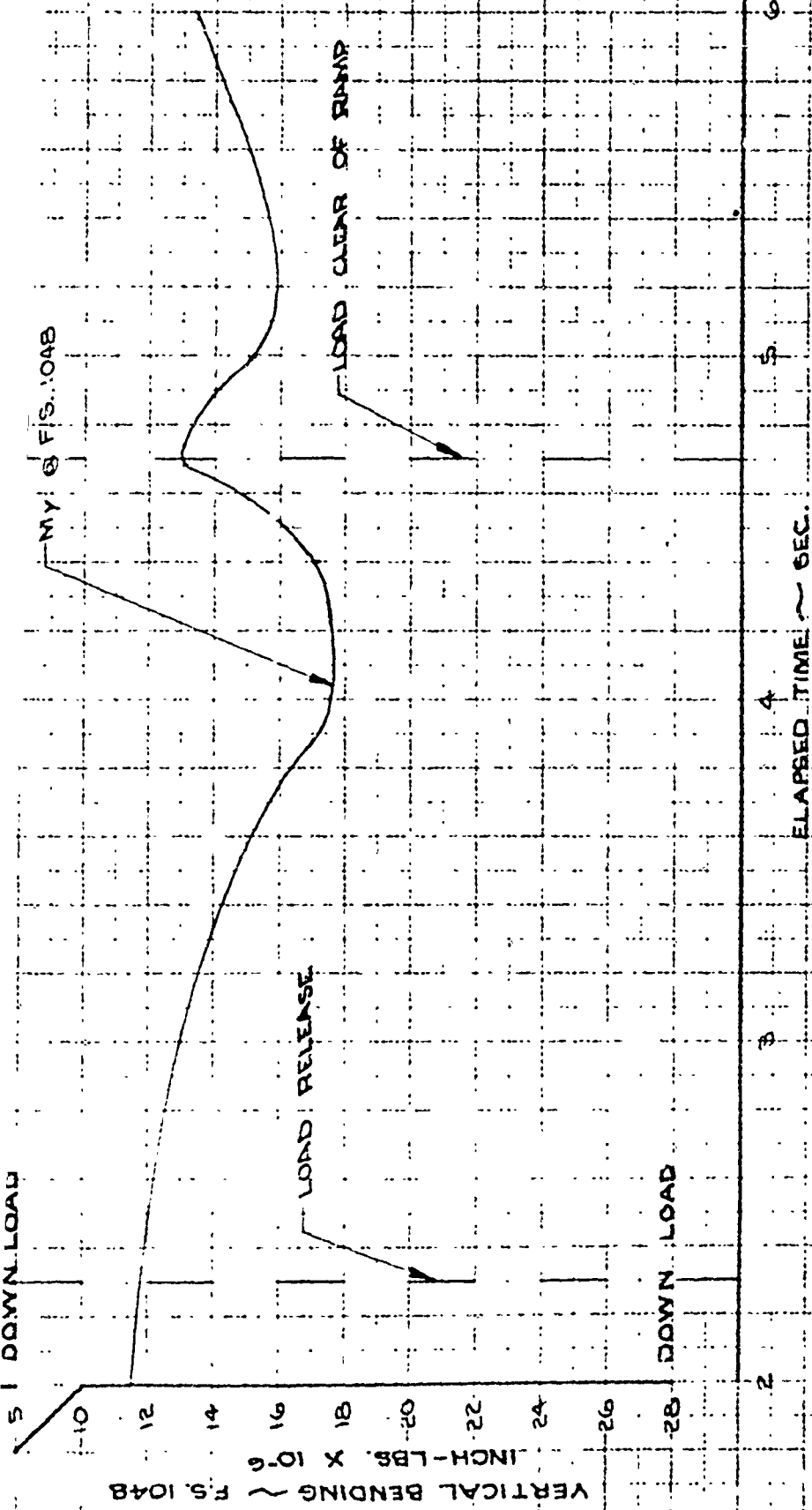


FIGURE D-30 F

6008
ADS-101F

JOB NO. ADS-36 SUB CODE 4.2.

HORIZONTAL STABILIZER NET LOADS

BENDING @ HBL 44L ~ M'x
INCH-LBS X 10⁻⁶

SHEAR @ HBL 44L ~ S'
LBS X 10⁻³

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

LOAD RELEASE

M'x @ VES 3AS

LOAD CLEAR OF RAMP

M'x @ HBL 44L

S' @ HBL 44L

GOOD
ADS-101G

6008
ADS-101G

UP LOAD

UP LOAD

UP LOAD

LOAD LEFT @ VS TIP

LOAD CLEAR OF RAMP

W' @ HBL 441

W' @ HBL 441

W' @ VES 345

LOAD RELEASE

HORIZONTAL STABILIZER NET LOADS

BENDING @ HBL 441 ~ M'x

SHEAR @ HBL 441 ~ S'x

INCH - LBS X 10⁻⁶

LBS X 10⁻³

JOB NO. ADS-36 SUB. CODE 4.2.

PREPARED BY T.E.D.
DATE 6-22-65
HECKED BY JMO

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REF BY NO ER 5473
MODEL C-141A
PAGE D-255

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 6-22-65

FLIGHT ~ 44

DROP NO ~ 32

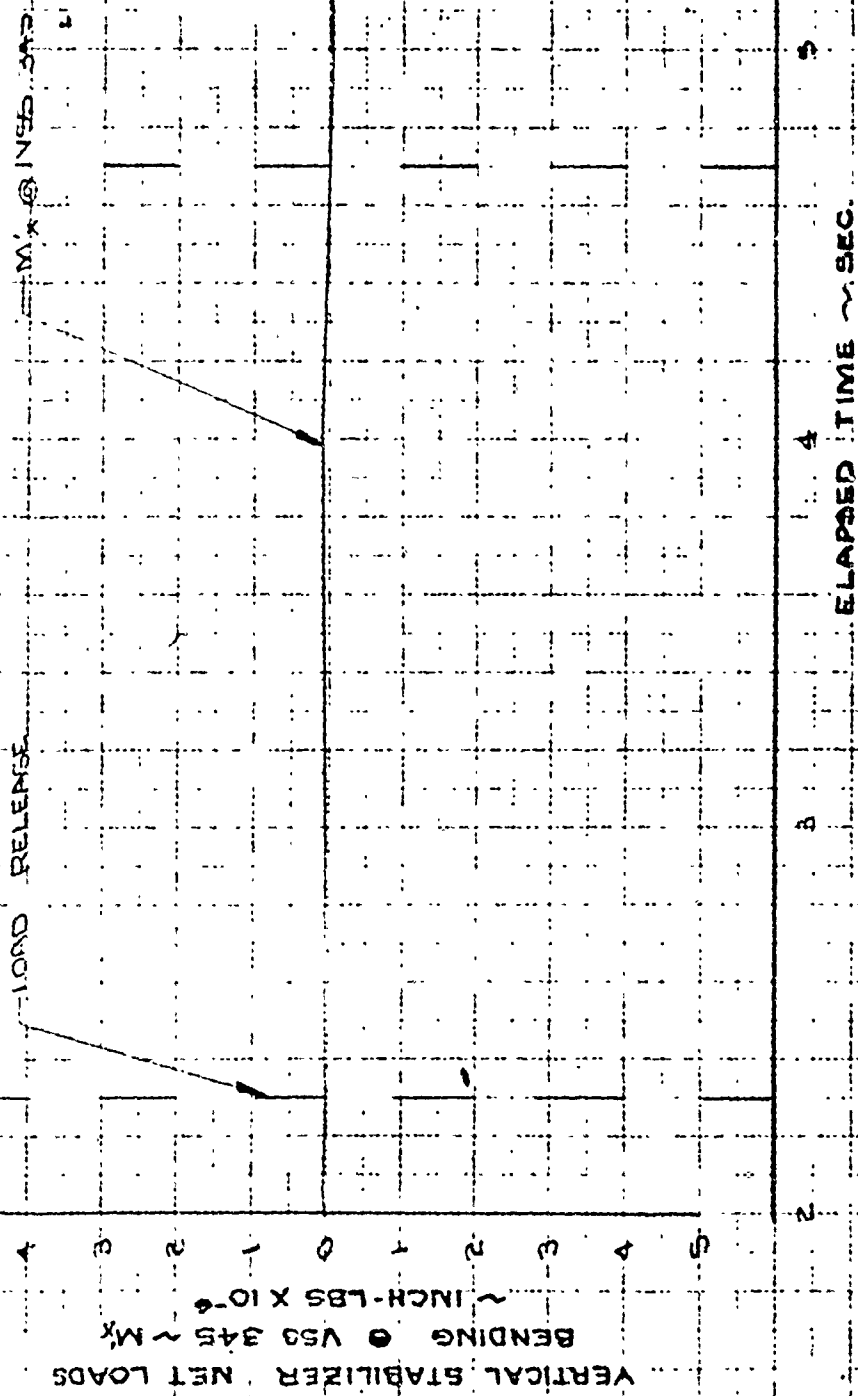
SHEET 1 OF 1

CARGO WT. 35,335 LBS

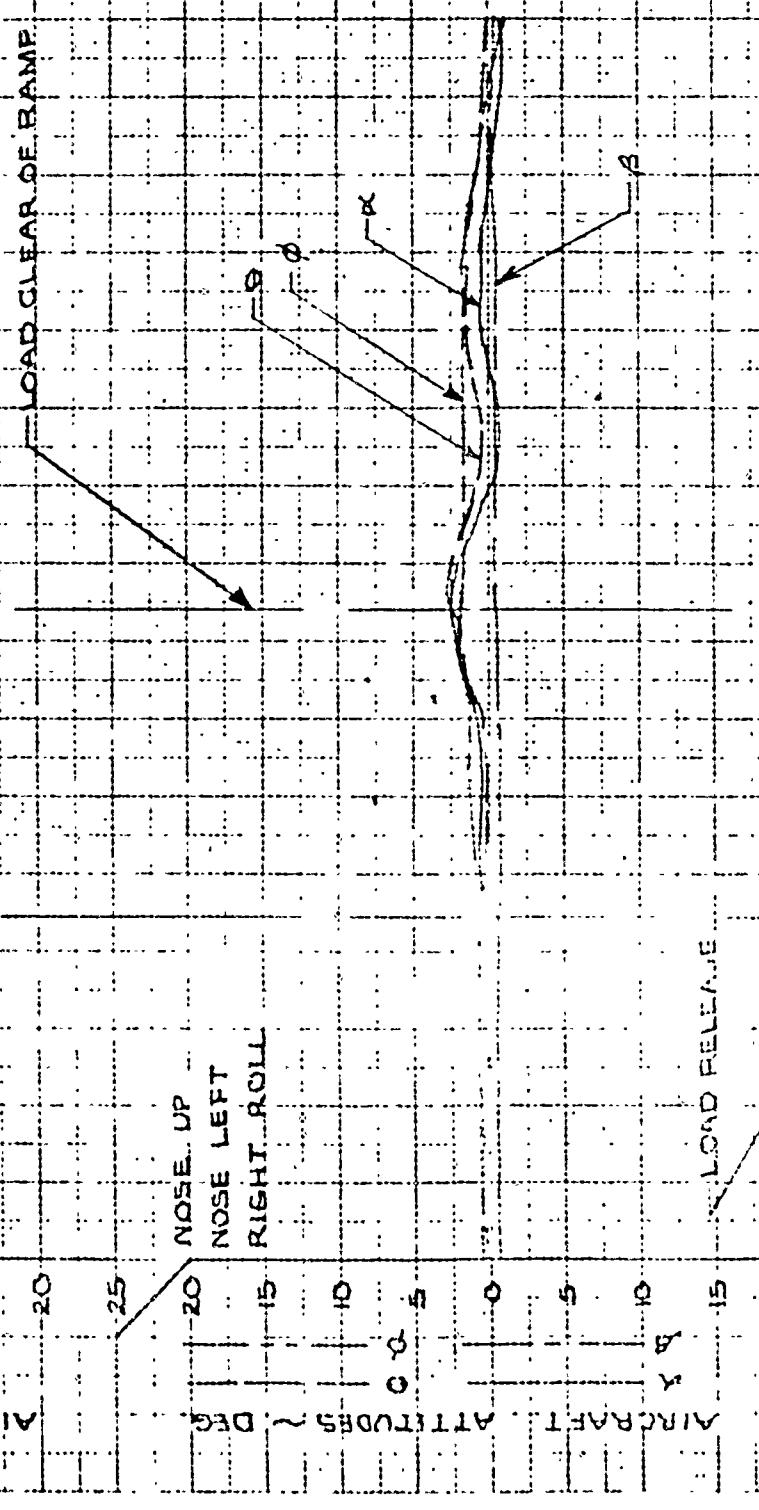
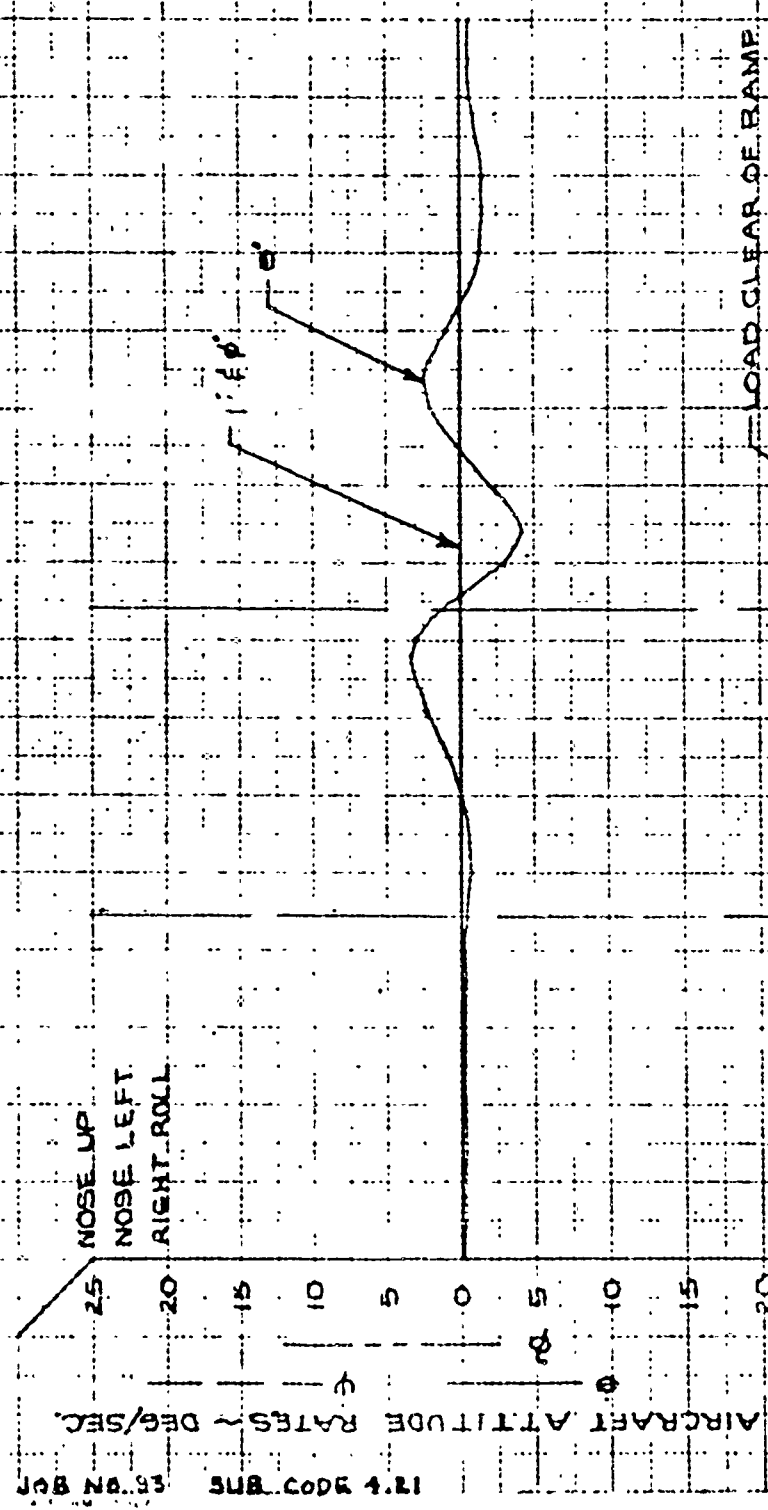
NOTE:
SEE FIGURE D-36A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE D-35G

6008
ADS-101G



6008
ADS178A



PREPARED BY J DG
DATE 10-5-65
CHECKED BY JWR

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-234

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC 600B
TEST DATE 10-4-65
FLIGHT 190 DROP NO. 33

SHEET 1 OF 7

CARGO WT. 24,760 LB.

RUN CONDITIONS

1. G.W. ~ 252,200 LB
2. C.G. PRIOR TO DROP ~ 25.6% MAC
3. C.G. AFTER DROP ~ 31.7% MAC
4. FLAPS ~ 39%
5. GEAR ~ UP
6. AVG. EPR ~ 1.53
7. α_H ~ 1.15 (A/C NOSE UP)

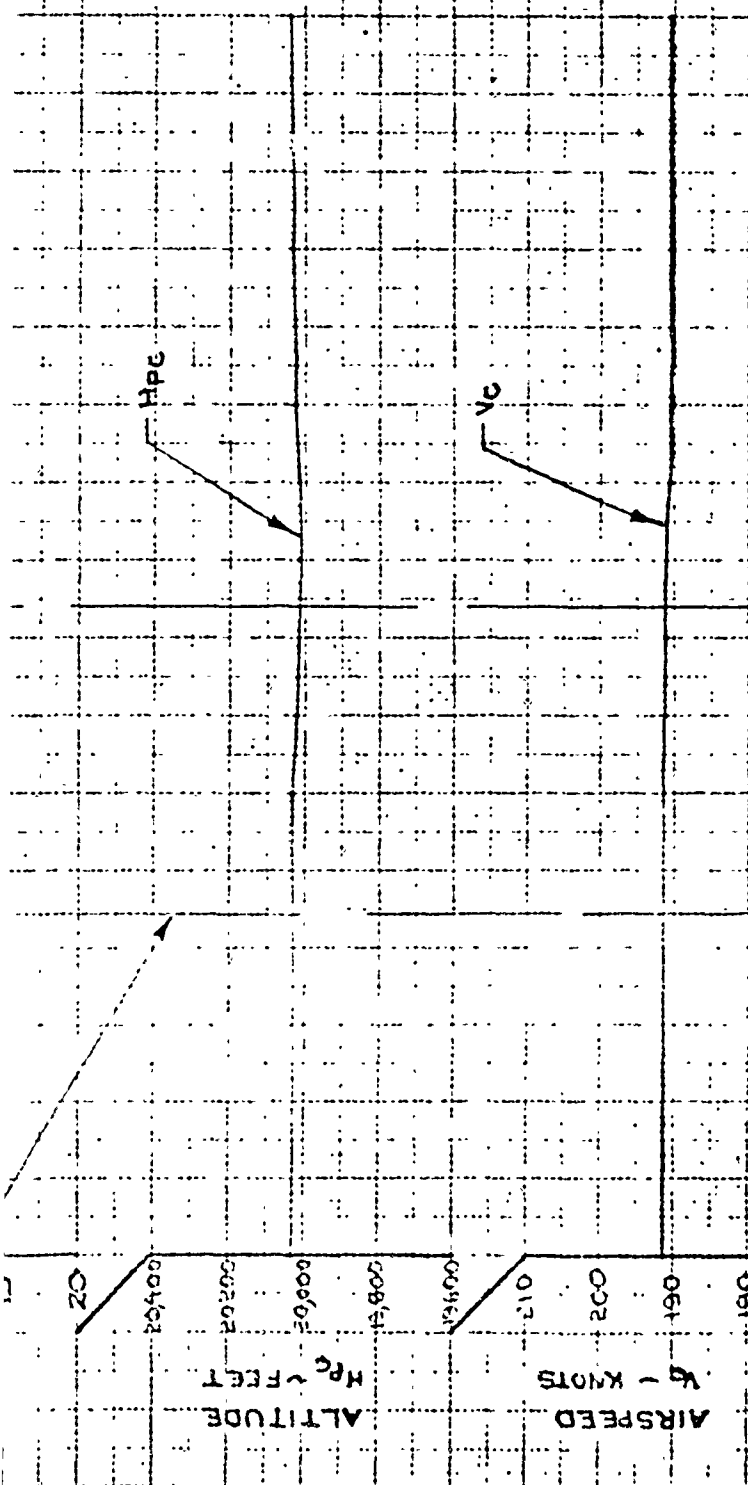
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3784
VERT. ~ WL181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ ONE
2. CHUTE SIZE ~ 24 FT.
3. RATED CHUTE FORCE / CARGO WT. 1.3
4. EXTRACTION LINE LENGTH ~ 60 FT.

FIGURE D-37A



600B

ADS 178A

REVISED 12-19-65
MB4

6008
ADS178B

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0

CONTROL FORCES ~ LBS.

JOB NO. 93 SUB. CODE 4.2

F_r

F_a

F_e

LOAD RELEASE

LEFT AILERON POSITION ~ DEG.

20
15
10
5
0
5
10

T.E. UP

53L



PREPARED BY JGG

DATE 10-3-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-235

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 10-4-65

FLIGHT 190

DROP NO 33

SHEET 2 OF 7

CARGO WT 24,760

NOTE:
SEE FIGURE 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

LOAD CLEAR OF RAMP

T.E. UP
T.E. DOWN

DEGREES

RUDDER & ELEVATOR POSITION

FIGURE 1-3713

6008

ADS 1783

6008
ADB178C

NOTE: θ CALCULATED FROM NA DATA

NOSE UP

40

20

0

20

40

UP ACCEL.

3.0

2.8

2.6

2.4

2.2

2.0

1.8

PITCHING ACCELERATION
DEG/SEC²

ELEVATIONS ~ 9
NA 051637
277

JOB NO 03 SUB. CODE 4.2.1

LOAD CLEAR OF RAMP

θ

PREPARED BY DTM

DATE 10-5-65

CHECKED BY JWR

LO KNEED GETTING A L. MEAS.
A DIVISION OF THE AIR FORCE RESEARCH AND DEVELOPMENT COMMAND

REPORT NO.

ER 5473

MODEL

C-241A

DATE

D-238

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-2077

LAC 6008

TEST DATE 10-4-65

FLIGHT 100

DROP NO. 33

SHEET 3 OF 7

CARGO WT. 24,760 LBS.

NOTE:

SEE FIGURE D37A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

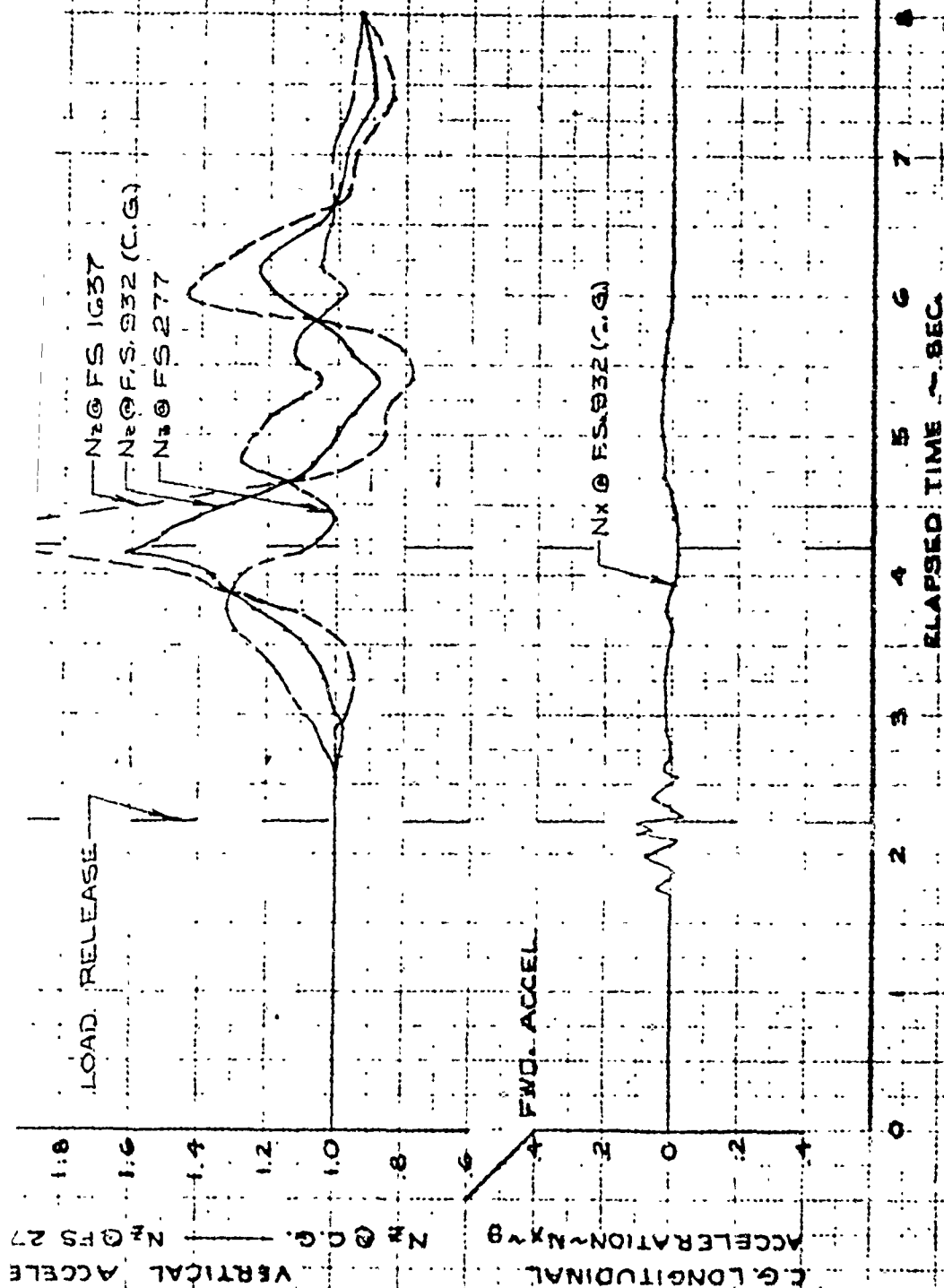


FIGURE D-37C

6008
ADS 170C

600B
ADS1780

RAMP LIP

LOAD C.G. POSITION

LOAD ACCELERATION

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA

JOB NO 93

SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION
g's

1500
1400
1300
1200
1100
1000
900
800
700
600
500
20
40

PREPARED BY JDG

DATE 10-3-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE D-237

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODE C-141A

AF 63-8077

LAC 6008

TEST DATE 10-4-65

FLIGHT 190

DROP NO. 33

SHEET 4 OF 7

CARGO WT. 24,760 LB.

NOTE:

SEE FIGURE D-37A, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

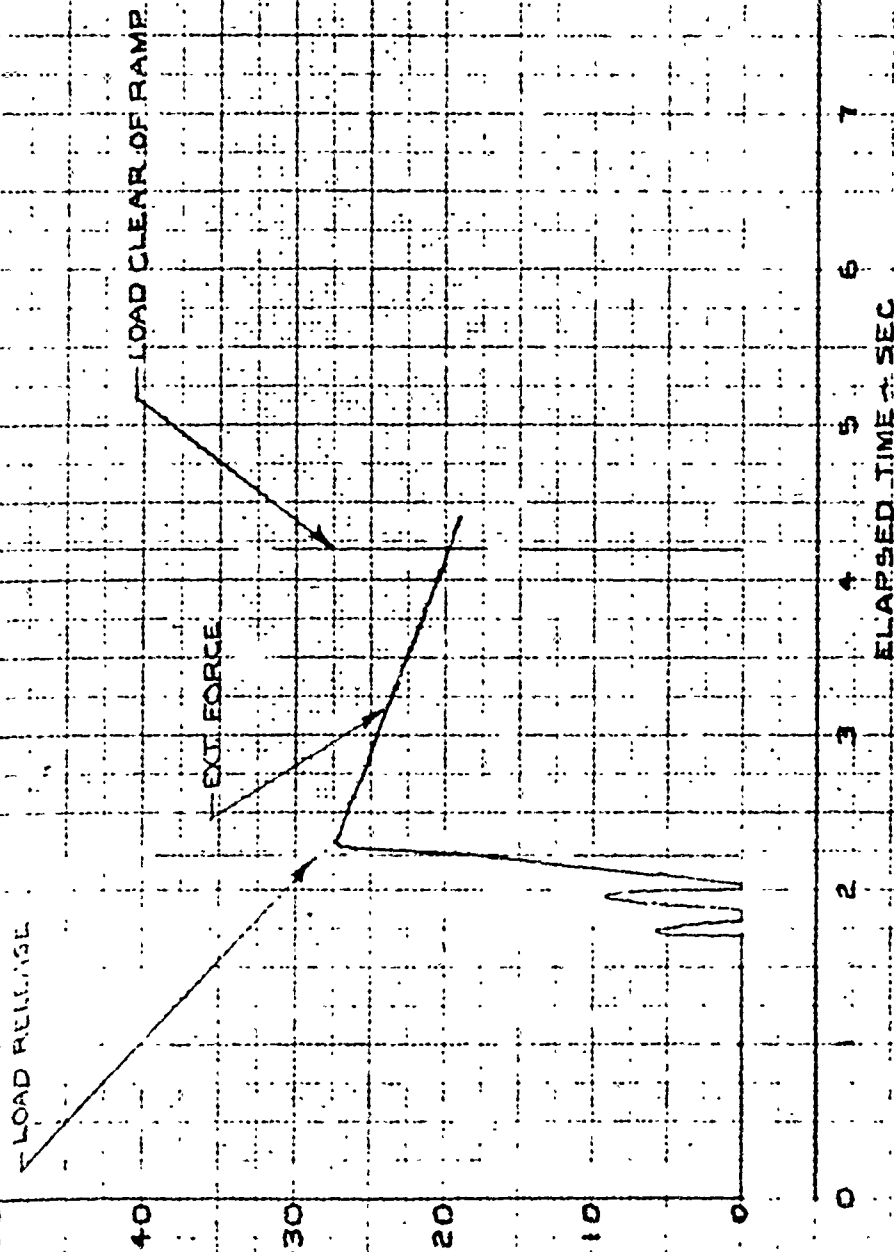
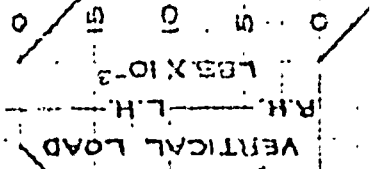
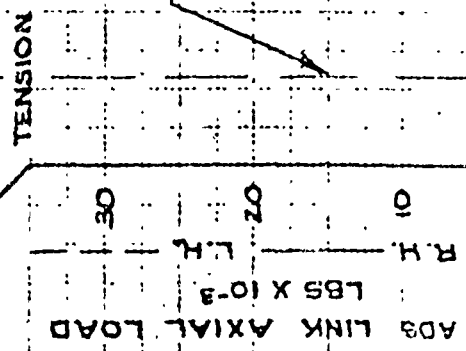
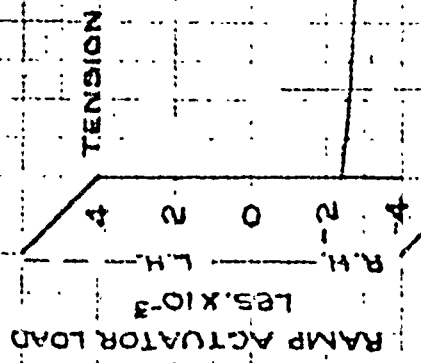


FIGURE D-37D

6008
ADS178D

6008
ADS-178E

JOB NO. 93 SUB CODE 4.2.1



R.H. RAMP ACTUATOR

L.H. RAMP ACTUATOR
NOT AVAILABLE

LOAD CLEAR OF RAMP

L.H. SPIDER ARM

R.H. SPIDER ARM

R.H. VERTICAL LOAD

L.H. VERTICAL LOAD

LOAD RELEASE

PULDOWN

PREPARED BY MBH
DATE 10-5-65
CHECKED BY JWR

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED & HEATH CORPORATION

REPORT NO. LR 3412
MODEL C-141A
PAGE D-238

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 10-4-65

FLIGHT 130

DROP NO. 33

SHEET 5 OF 7

CARGO WT. 24,760 LBS.

NOTE:
SEE FIGURE D-37A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

L.H. VERTICAL LOAD

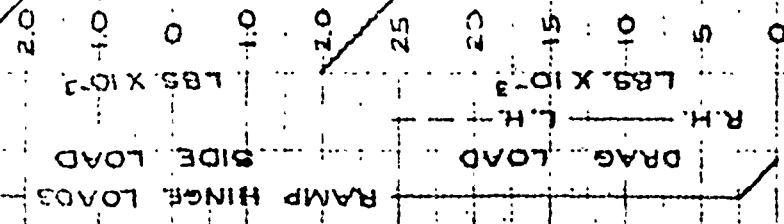
L.H. DRAG LOAD
R.H. DRAG LOAD

PULL RIGHT

PULL LEFT

FIGURE D-37E

6008
ADS-178E



6008
AD\$ 178F

R.H. PETAL DOOR ACTUATOR
L.H. PETAL DOOR ACTUATOR

MY @ FS 1500

COMPRESSION

DOWN LOAD

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH
LH

VERTICAL BENDING ~ FS 1500
INCH-LBS. X 10⁻⁶

JOB NO. 93 SUB. CODE 4.2.1

PREPARED BY DTM

DATE 10-8-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-239

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 10-4-65

FLIGHT 190

DROP NO 33

SHEET 6 OF 7

CARGO WT. ~ 24,760 LBS

NOTE:

SEE FIGURE D-37A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION

ELAPSED TIME ~ SEC.

DOWN LOAD

LOAD RELEASE

LOAD CLEAR OF RAMP

MYG FS 1048 - NOT USEABLE

VERTICAL BENDING ~ FS. 1048
INCH-LBS. X 10⁶

FIGURE D-37F

6008

ADS. 178F

6008
ADS 178G

UP LOAD

20
15
10
5
0
5
10
15
20

S₂@HBL 44L

UP LOAD

20
15
10
5
0
5
10
15
20

M₂@HBL 44L

LOAD LEFT @ VS TIP

LOAD CLEAR OF FRAME

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ S₂
LBS X 10⁻³

BENDING @ HBL 44L ~ M₂
INCH-LBS X 10⁻⁶

JOB NO. 92 SUB. CODE 4.2.1

PREPARED BY DTM
DATE 10-6-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-240

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF65-5077

LAC 6008

TEST DATE: 10-4-65

FLIGHT 100

DROP NO. 33

SHEET 7 OF 7

CARGO WT. ~24,760 LBS

NOTE:
SEE FIGURE 3-37G SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE 3-37G

6008
ADS 175G

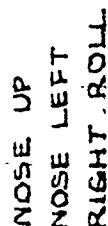
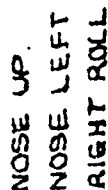
LOAD CLEAR OF HAMP

LOAD CLEAR OF HAMP

LOAD CLEAR OF HAMP

VERTICAL STABILIZER NET 1.45
BENDING @ VES 345 ~
~ INCH-LBS X 10⁻⁶

四



LOAD RELEASE

PREPARED BY TED
DATE 6-4-65
REVIEWED BY

REF ID: ER 5473
MODEL C-141A
TALL D-241

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077 LAC 6008

TEST DATE 6-3-66

FLIGHT ~ 136 DROP NO. ~ 34

SHEET 1 OF 5

CARGO WT. 24,830 LBS

RUN CONDITIONS

1. G.W. ~ 183600 LBS
2. C.G. PRIOR TO DROP ~ 27.5 % MAC
3. C.G. AFTER DROP ~ 30.3 % MAC
4. FLAPS ~ 63 %
5. GEAR ~ UP
6. AVG. EPR ~ 1.23
7. α_H ~ 1.2 DEG (A/C N.U.)

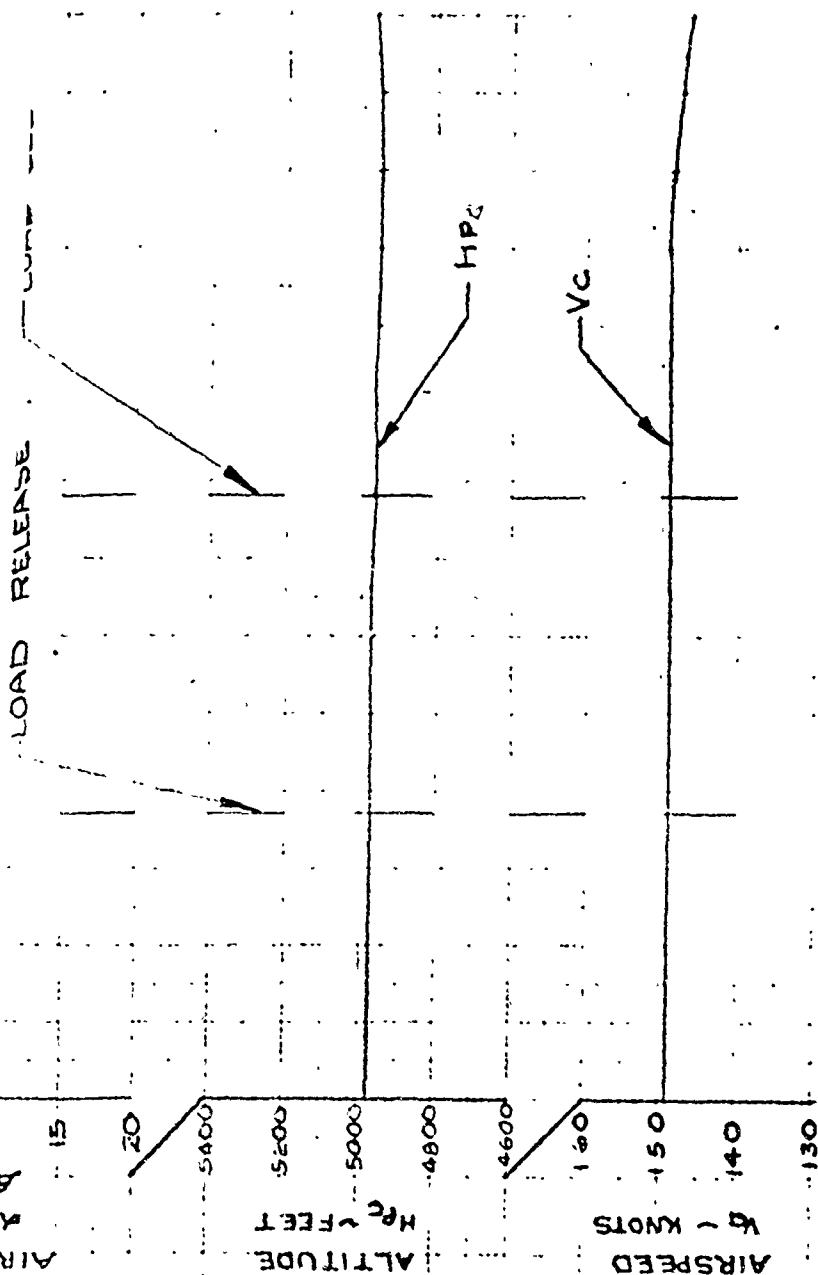
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 240 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 884
VERT. ~ WL 173

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 23
3. RATED CHUTE FORCE/CARGO WT. 33
4. EXTRACTION LINE LENGTH ~ 140 FT.

FIGURE D-38A



6008
ADS-93A
REVISED 12-15-66
M-H



12.4 3000 TMS-50A 501

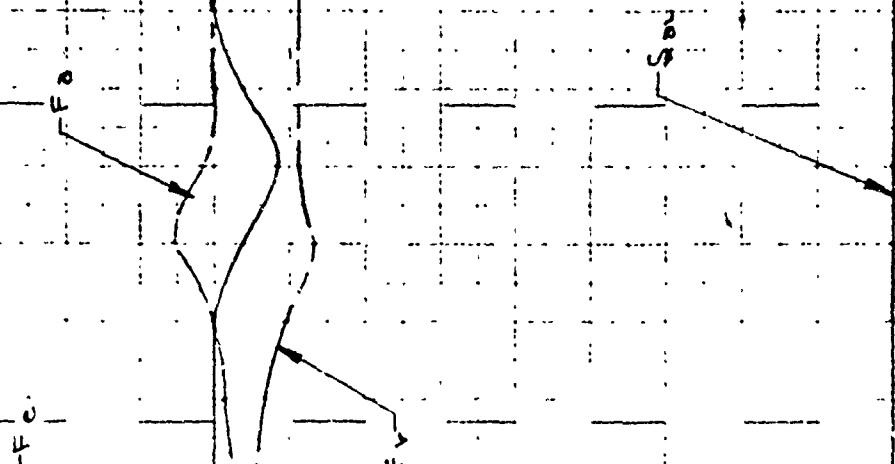
CONTROL FORCES ~ LBS.

F_x F_y F_z

70 60 50 40 30 20 10 0 10 20 30 40 20 15 10 5 0

RIGHT ROLL
PUSH LEFT
PULL

T.E. UP



6008
ADS-93E5

RECALLED BY TED:
DATE 6-4-69
TIME DELIVERY 1000

REPORT NO ER 5473
MODEL C-141A
PAGE D-242

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 6-3-65
FLIGHT ~ 136 DROP NO ~ 34
SHEET 2 OF 5
CARGO WT. 24,830 LBS

NOTE:
SEE FIGURE D-38B SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

LOAD RELEASE

LOAD RELEASE

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONS

LEFT AILER

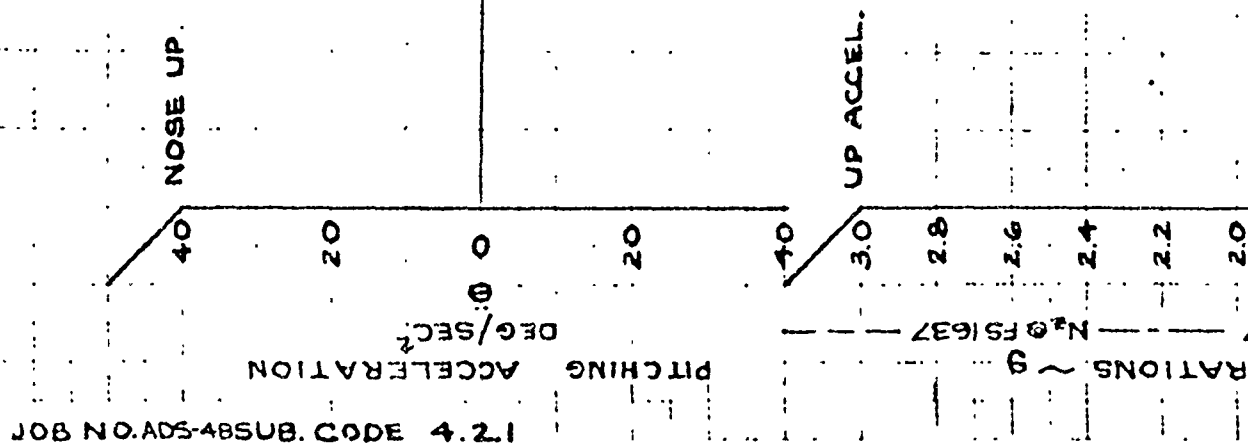
ELAPSED TIME ~ SEC

FIGURE D-38B

6008
ADS-93B

6008
ADS-93C

NOTE: θ CALCULATED FROM N₂ DATA



N₂ QFS.1637

T.B.D.
6-4-65
JED

ER 5473

C-141A

D-243

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 6008

TEST DATE: 6-3-65

FLIGHT ~ 136

DROP NO ~ 38

SHEET 3 OF 5

CARGO WT. 24,830 LBS

NOTE:

SEE FIGURE D-38A SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

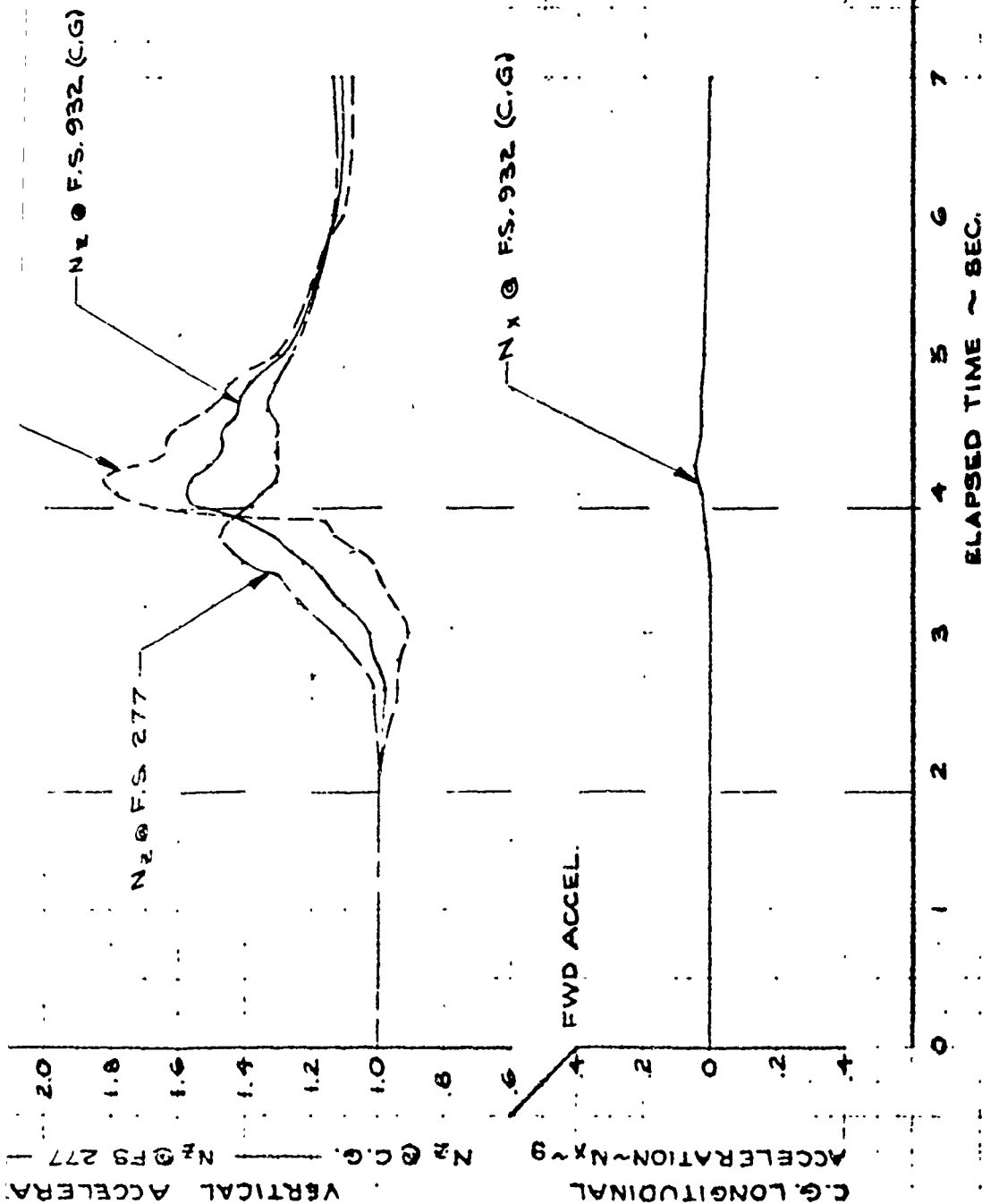


FIGURE D-38C

6008

ADS-93C

N

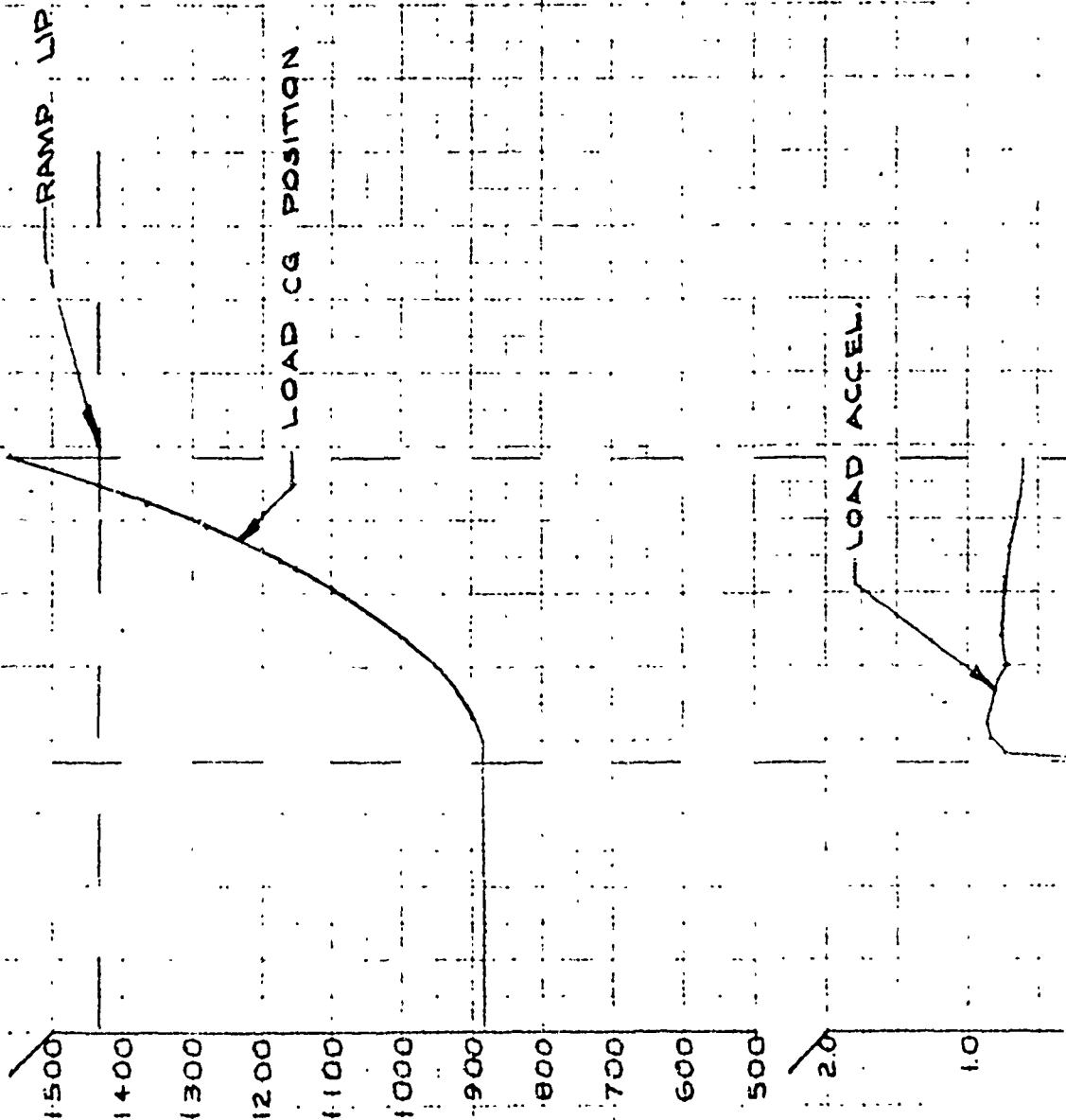
643

6008
ADS-93D

JOB NO ADS-48 SUB CODE 4.2

LOAD C.G. POSITION ~ FUS. STA.

NO ACCELERATION
g's



NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.

DATE 6-4-65
INFLIGHT JUP

EXPERIMENTAL DATA
A DIVISION OF THE ARMY AIR FORCE

MODEL

D-244

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 6-3-65

FLIGHT ~ 136

DROP NO. ~ 34

SHEET 4 OF 5

CARGO WT. 24,830 LBS

NOTE:

SEE FIGURE D-38A SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

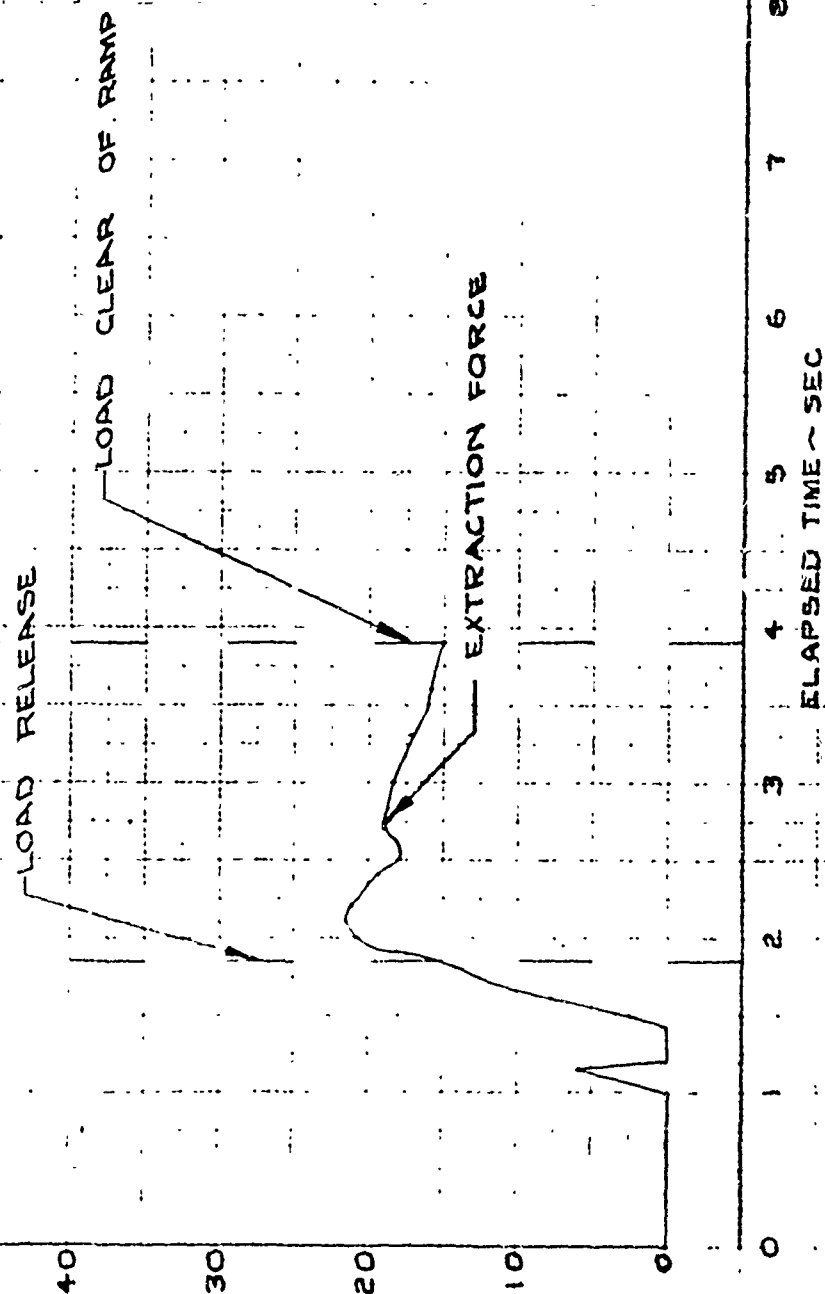


FIGURE D-38D

6008
ADS-93D

ADS-93E

Prepared	NAME	DATE	LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP	PERM D-245
Checked			TITLE		Model C-141A	
Approved					Report No ER 5475	

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63-8077 LAC 6008
FLIGHT 136 TEST DATE: 6-3-65

G.W. 185,600 LBS. A/S 150 KCAS.

C.G. 27.5% MAC. ALT. ~ 4,980 FT.

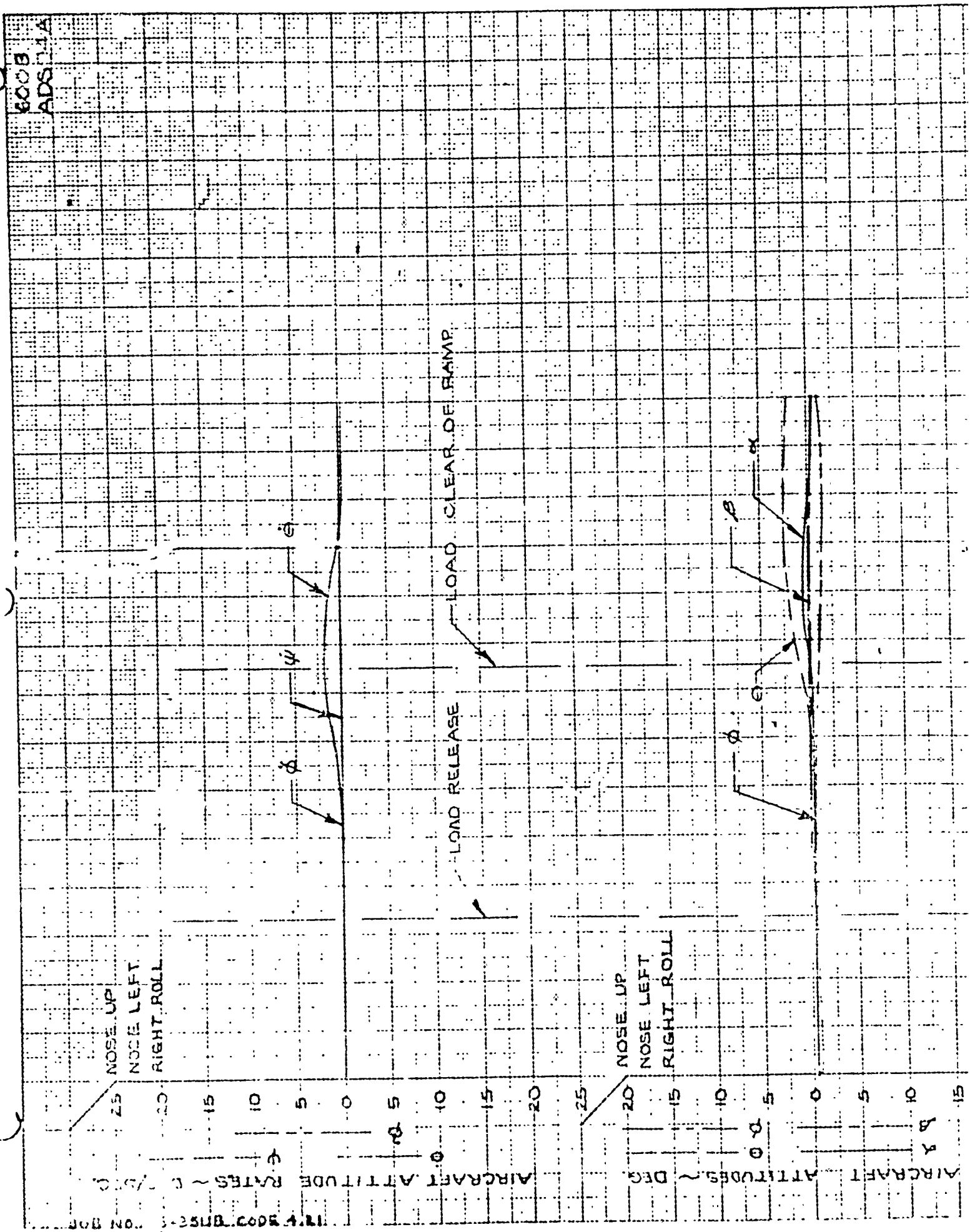
DROP WT. ~ 24,830 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	2.0
2	ANGLE OF PITCH	"	4.4
3	C.G. VERT. ACCEL.	g's	1.58
4	C.G. LONG. ACCEL.	"	- 0.05
5	VERT. ACCEL. @ F.S. 277	"	1.48
6	VERT. ACCEL. @ F.S. 1637	"	1.83
7	VERT. BEND. @ F.S. 1048	IN.-LBS X 10 ⁻⁶	18.198
8	VERT. BEND. @ F.S. 1568	"	0.588
9	BENDING ~ M _x @ HBL 44L	"	- 0.186
10	SHEAR ~ S _z @ HBL 44L	LBS. X 10 ⁻³	- 1.08
11	PITCH TRIM ACTUATOR ~ S _z	"	2.576
12	R.H. RAMP ACTUATOR LOAD	"	0
13	L.H. " " " "	"	3.15
14	R.H. SPIDER ARM LOAD	"	6960
15	L.H. " " " "	"	7140
16	R.H. PETAL DOOR ACTUATOR LOAD	"	8711
17	L.H. " " " "	"	9450
18	BENDING ~ M _x @ VSS	IN.-LBS. X 10 ⁻⁶	0.09
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻⁸	3.431
20	L.H. " " " "	"	3.389
21	R.H. RAMP HINGE DRAG LOAD	"	2.929
22	L.H. " " " "	"	1.361
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	21.60
25	CARGO. LONG. ACCEL.	g's	0.87

FIG. D-38E

ADS-93E

6008
ADS11A



PREPARED BY FCW

DATE 6-7-65

CHECKED BY JMO

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL D-141A

PAGE D-246

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077

LAC 6008

TEST DATE 6-4-65

FLIGHT 137

DROP NO. 55

SHEET 1 OF 5

CARGO WT. 5940 LBS.

RUN CONDITIONS

1. G.W. ~ 163800 LBS.
2. C.G. PRIOR TO DROP ~ 24.8% MAC
3. C.G. AFTER DROP ~ 29.5% MAC
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR ~ 1.26 (4 ENGINES)
7. α_H ~ 0.6 DEG. (A/C N.U.)

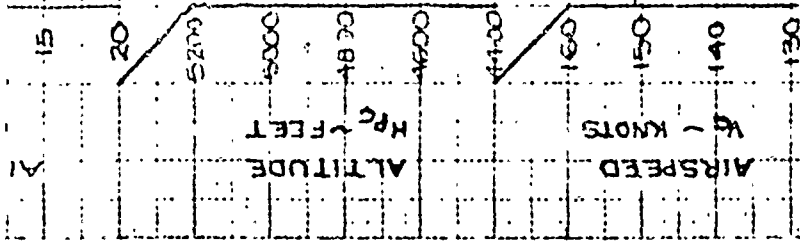
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 192 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3592
VERT. ~ WL174

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 5.5 FT.
3. RATED CHUTE FORCE/CARGO WT. 1.01
4. EXTRACTION LINE LENGTH ~ 150

FIGURE D32A

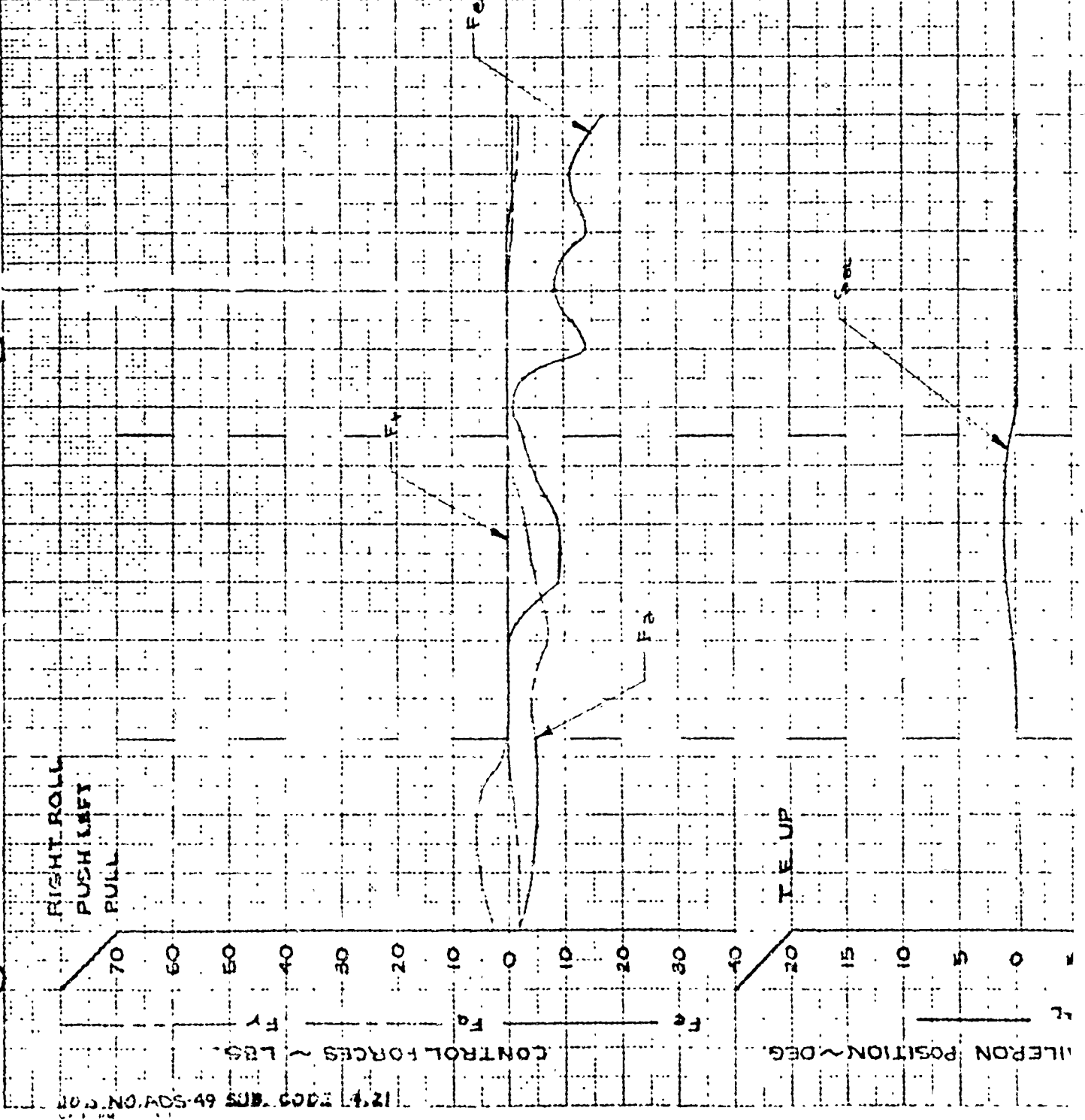


6008

ADS-94A

REVISED 12-15-65
MBH

6008
ADS-94B



PREPARED BY T.E.D

DATE 6-7-48

CHIEFED BY *gms*

1. JOURNAL OF THE AIR CRAFT

2. JOURNAL OF THE AIR CRAFT

RECEIVED BY ER 5473

MODEL C-141A

DATE D-247

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 68 8077

LAC 6008

TEST DATE 6-4-48

FLIGHT ~ 137

DROP NO ~ 35

SHEET 2 OF 5

CARGO WT 5940 LBS

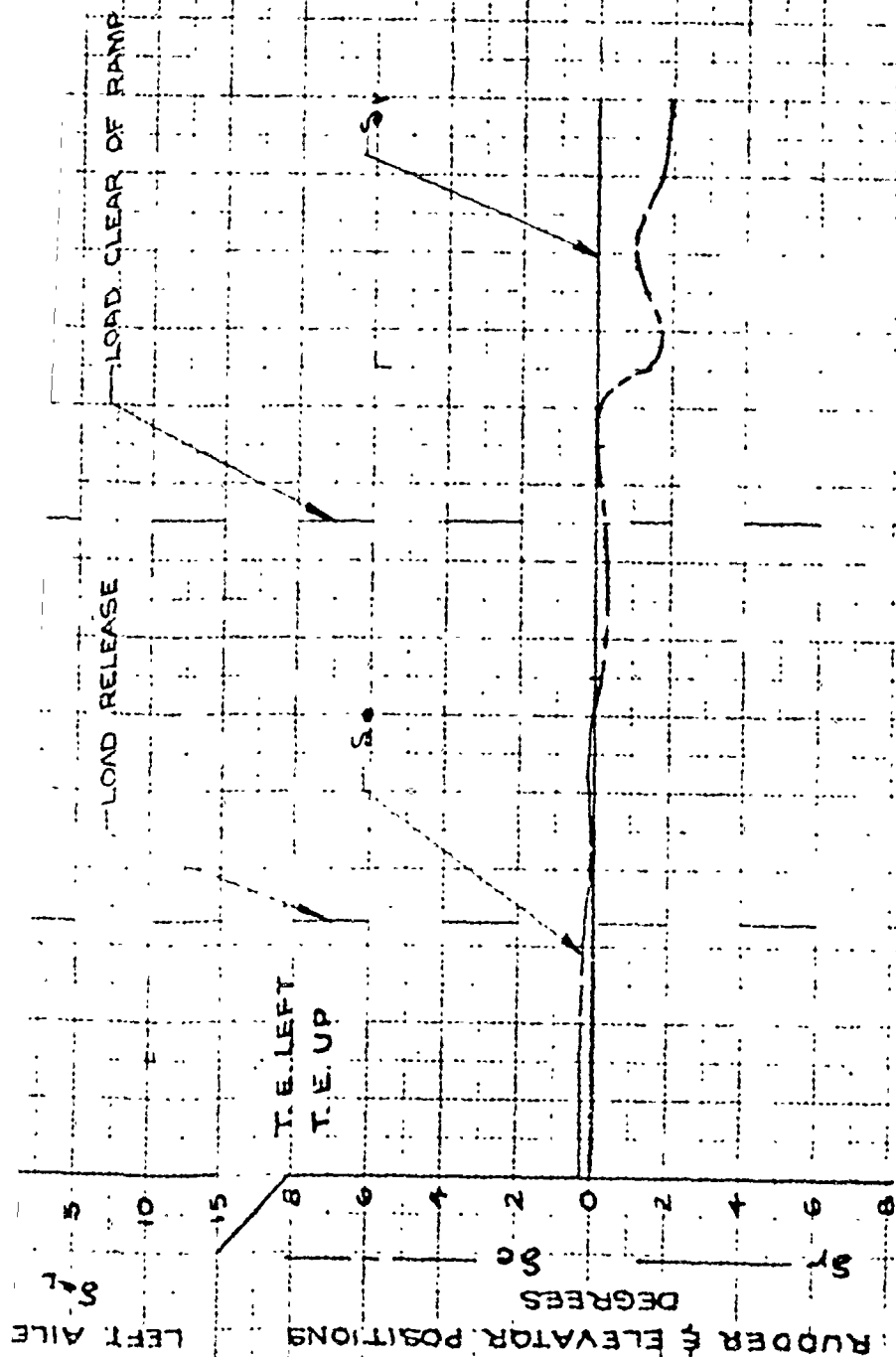
NOTE:

SEE FIGURE D393 SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

FIGURE D393

6008
ADS-94B



6008
ADS-94C

NOTE: θ CALCULATED FROM NA DATA

NOSE UP

40

20

0

20

40

PITCHING ACCELERATION
DEG/SEC²

UP ACCEL.

3.0

2.8

2.6

2.4

2.2

2.0

1.8

ACCELERATIONS ~ g
NA F.S. 1637

LOAD RELEASE

LOAD CLEAR OF RAMP

NA @ F.S. 1637

JOB NO. ADS-4 SUB. CODE 4.2.1

FILED BY T.E.D.
DATE 6-7-68
C-141A

REPORT NO. ER 5473
MODEL C-141A
PAGE D-248

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-8077 LAC 6008
TEST DATE: 4-4-65
FLIGHT ~ 131 DROP NO ~ 35

SHEET 3 OF 5

CARGO WT. 5940 LBS

NOTE:
SEE FIGURE D-32C SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

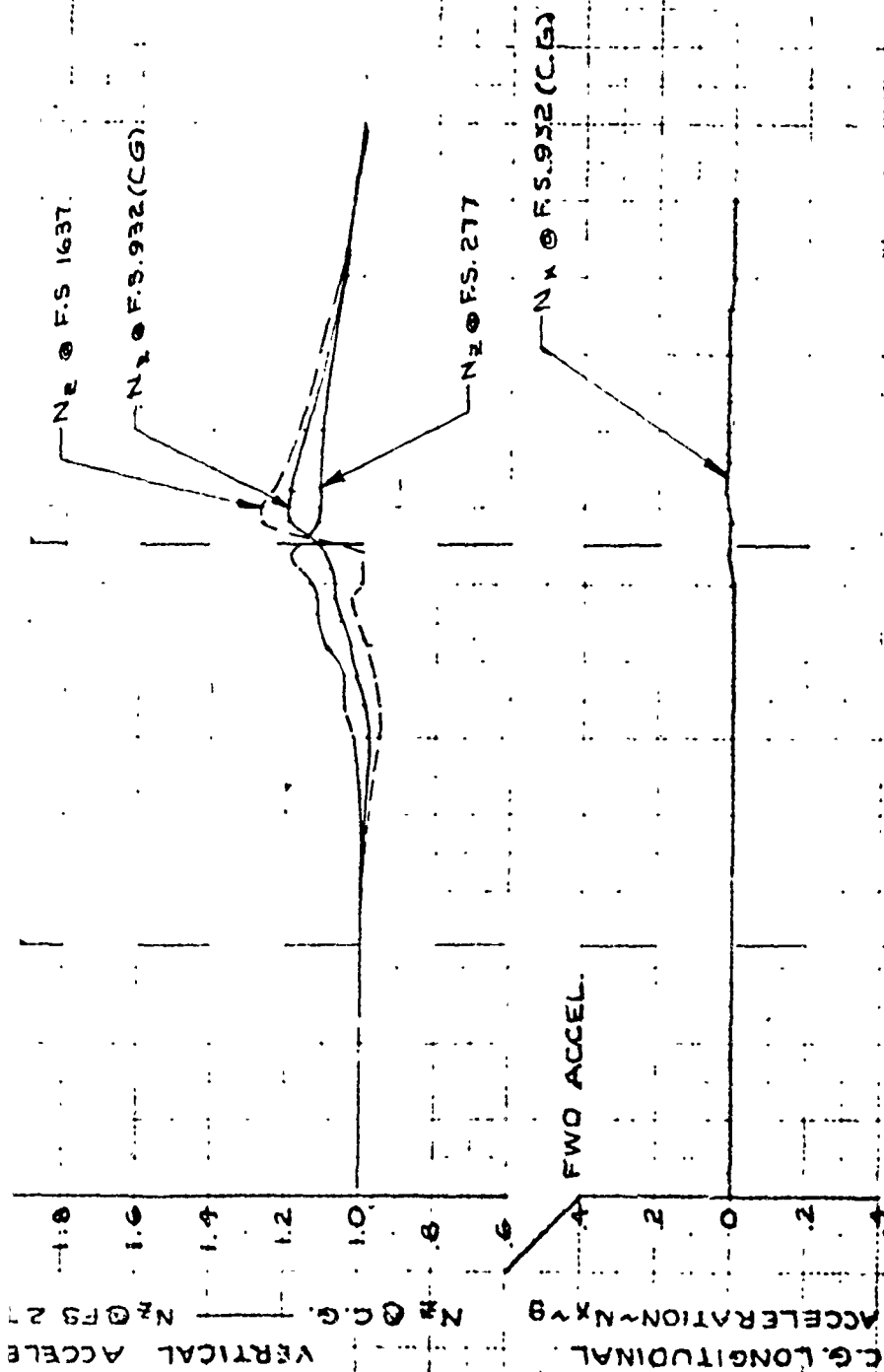


FIGURE D-32C

6008
ADS-94C

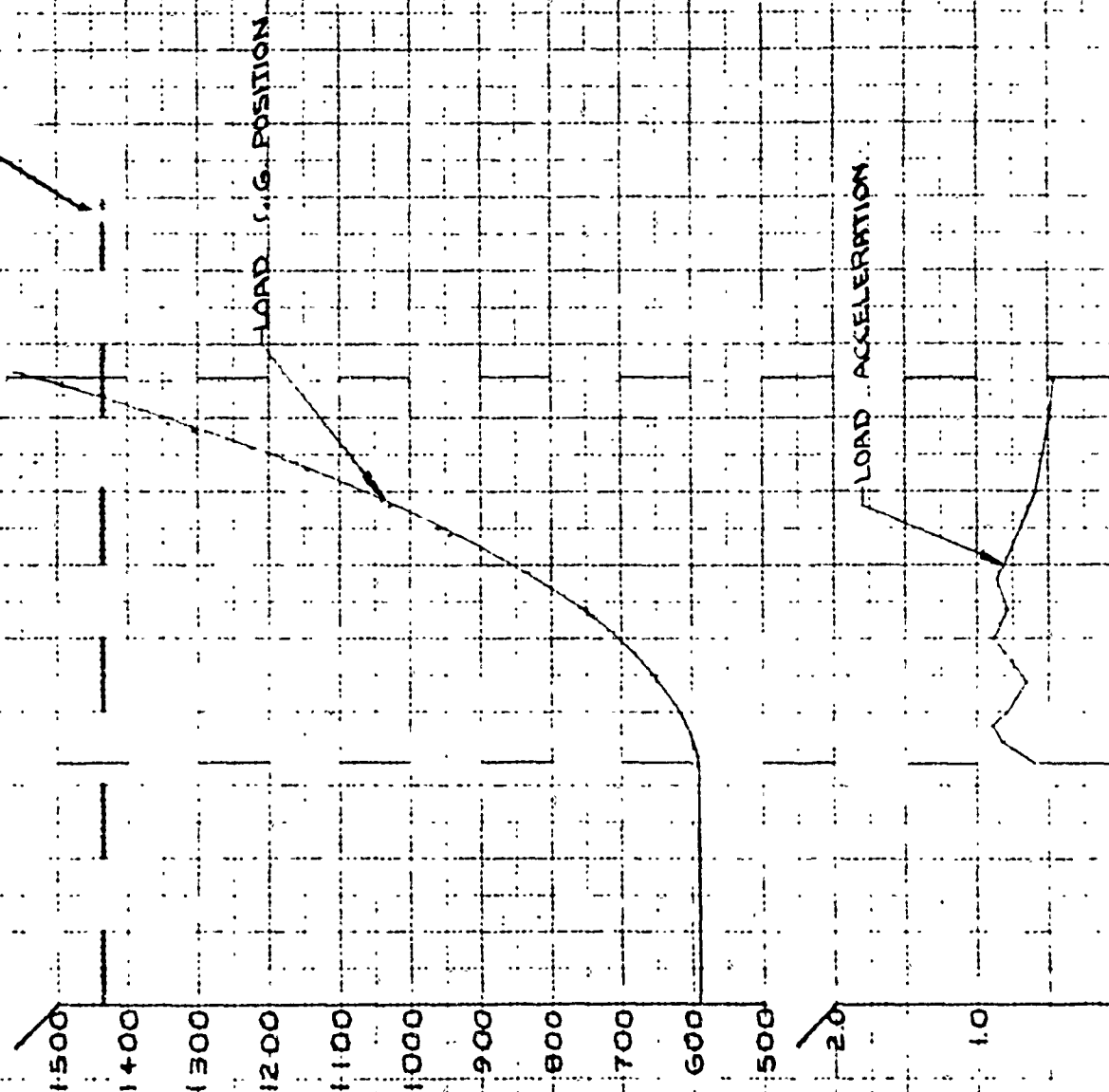
6008
A18-9AD

JOB NO ADS-49 SUB CODE 4.2

LOAD C.G. POSITION - FUS. STA.

LOAD ACCELERATION

g's



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA

PREPARED BY T.R.O.
DATE 6-7-65
CHECKED BY JLM

LOCKHEED TECHNOLOGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-249

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE ~ 6-4-65
FLIGHT ~ 137 DROP NO. ~ 35

SHEET 4 OF 5

CARGO WT. 5940 LBS

NOTE:
SEE FIGURE D-39A SHEET 1 OF 5
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

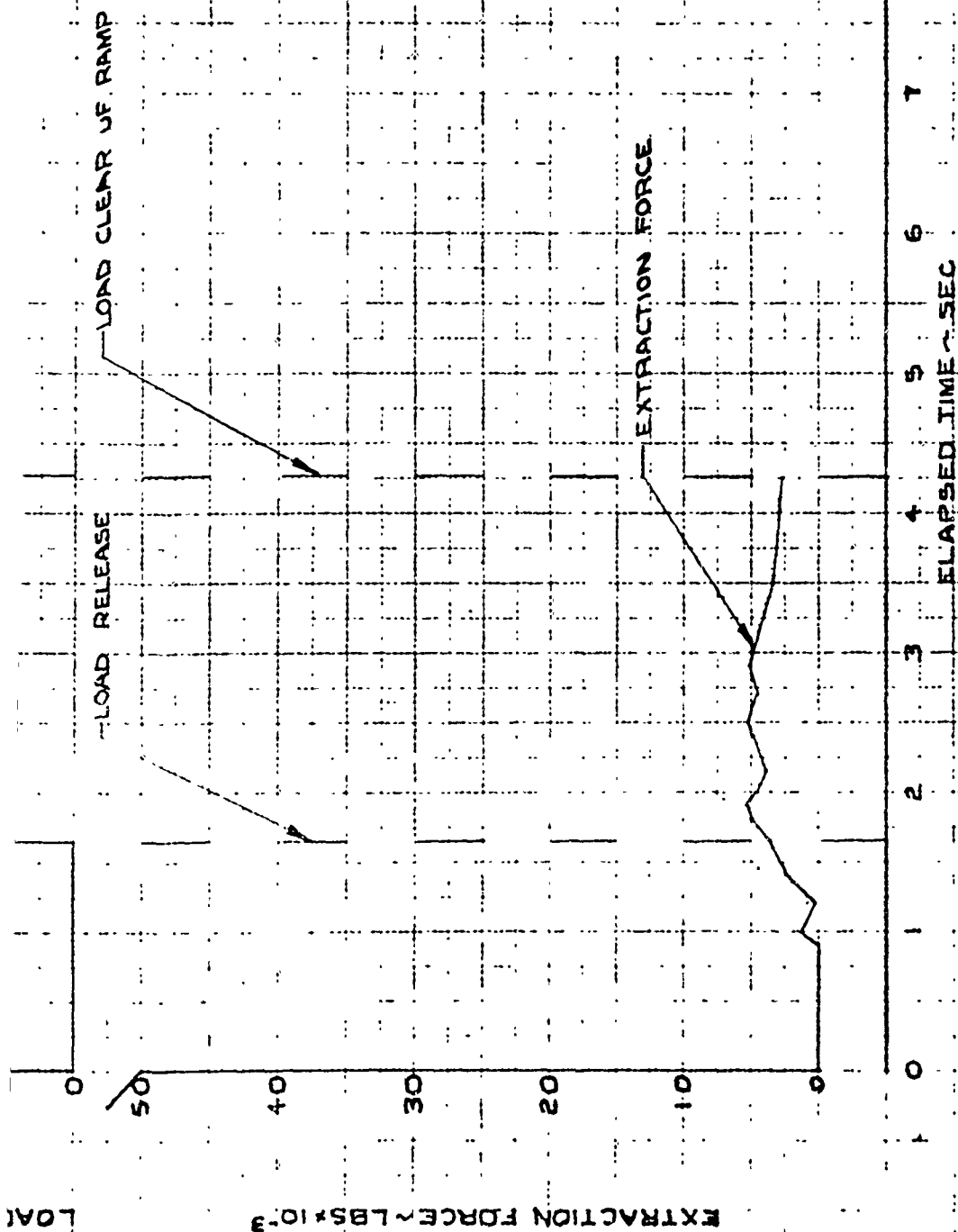


FIGURE D-39D

6008
ADS-94D

Prepared		LOCKHEED-GEORGIA COMPANY A DIVISION OF LOCKHEED AIRCRAFT CORPORATION	Page	TEMP D-21
Checked		TITLE	Model	C-141A
Approved			Report No	ER 54

PEAK LOADS DURING ADS PARACHUTE EXTRACTION

MODEL C-141A

AF 63 BQ77

LAC 6008

FLIGHT 137

TEST DATE 6-4-65

G.W. 163,800 LBS. A/S KCAS

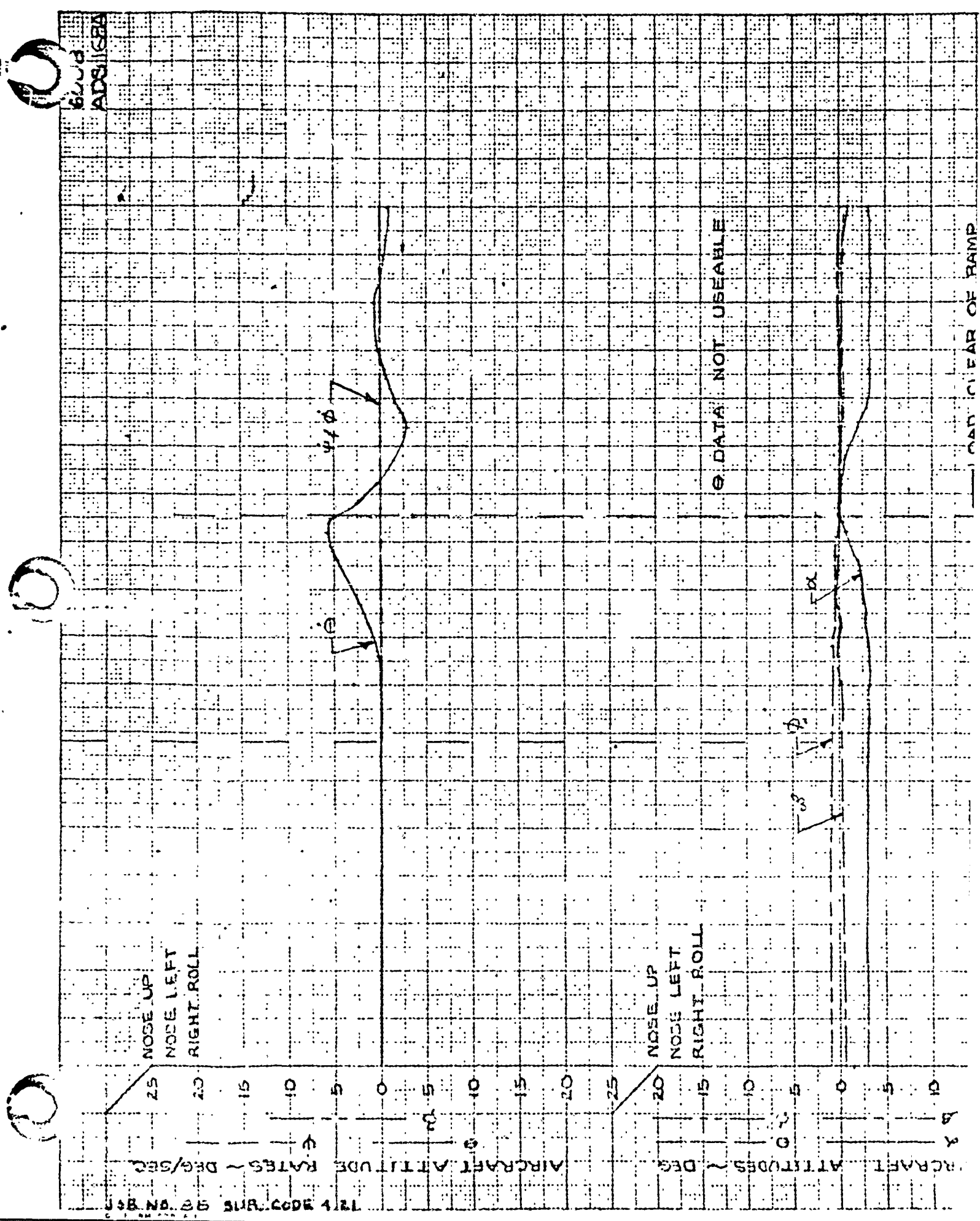
C.G. 24.8 %MAC ALT. ~ 5,000 FT.

DROP WT. ~ 5,940 LBS.

	MEASUREMENT	UNITS	PEAK LOAD
1	ANGLE OF ATTACK	DEGREES	0.6
2	ANGLE OF PITCH	"	2.5
3	C.G. VERT. ACCEL.	g's	1.20
4	C.G. LONG. ACCEL.	"	0.03
5	VERT. ACCEL. @ F.S. 277	"	1.19
6	VERT. ACCEL. @ F.S. 1637	"	1.28
7	VERT. BEND. @ F.S. 1048	IN-LBS X 10 ⁻⁶	16.76
8	VERT. BEND. @ F.S. 1568	"	2.42
9	BENDING ~ M'x @ HBL 44L	"	0.492
10	SHEAR ~ S'z @ HBL 44L	LBS. X 10 ⁻³	3.93
11	PITCH TRIM ACTUATOR ~ S'z	"	2.450
12	R.H. RAMP ACTUATOR LOAD	"	1.357
13	L.H. " " " "	"	1.040
14	R.H. SPIDER ARM LOAD	"	2.860
15	L.H. " " " "	"	2.660
16	R.H. PETAL DOOR ACTUATOR LOAD	"	7.450
17	L.H. " " " "	"	7.750
18	BENDING ~ M'x @ VSS	IN-LBS. X 10 ⁻⁶	0.094
19	R.H. RAMP HINGE VERT. LOAD	LBS. X 10 ⁻³	1.457
20	L.H. " " " "	"	1.426
21	R.H. RAMP HINGE DRAG LOAD	"	0.764
22	L.H. " " " "	"	0.794
23	RAMP HINGE TOTAL SIDE LOAD	"	N.A.
24	EXTRACTION CHUTE FORCE	"	5.290
25	CARGO LONG. ACCEL.	g's	0.88

GA FORM 100-2

FIG. D-39 E
ADS-94 E



PREPARED BY MBH
 DATE 2-23-65
 CHECKED BY MBH

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-251

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 6008

TEST DATE 2-23-65

FLIGHT 186

DROP NO. 36

SHEET 1 OF 7

CARGO WT 24,340 LBS.

RUN CONDITIONS

1. G.W. ~ 264,100 LBS.
2. C.G. PRIOR TO DROP ~ 23.1% MAC
3. C.G. AFTER DROP ~ 33.8% MAC
4. FLAPS ~ 75%
5. GEAR ~ DOWN
6. AVG. EPR ~ 1.50
7. α_H ~ 2.15° (A/C NU)

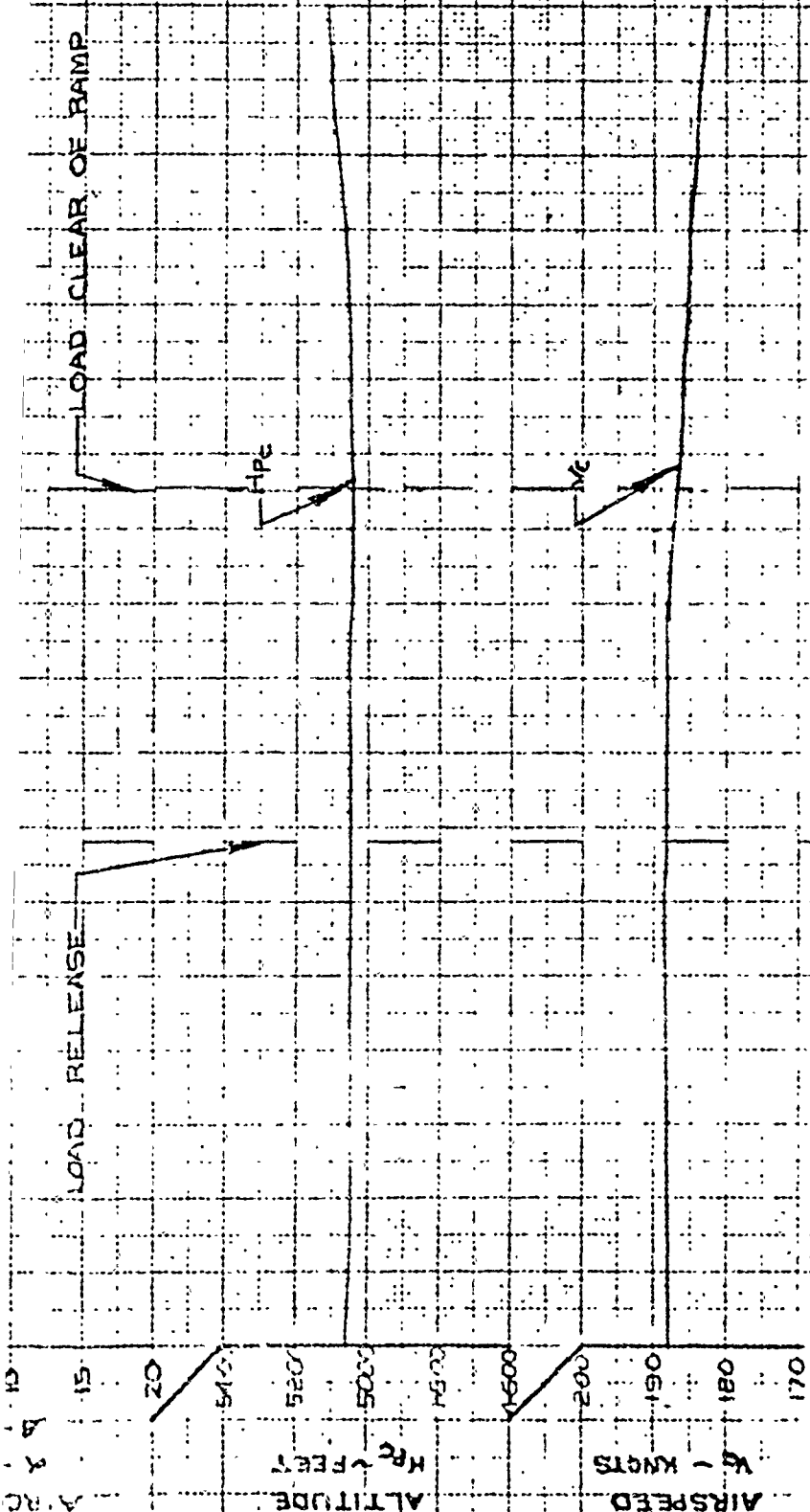
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 208 IN.
3. CARGO C.G. POSITIONS
 LONG. ~ F3 ~ 64.5
 VERT. ~ WL ~ 181

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1
2. CHUTE SIZE ~ 24 FT
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 100 FT

FIGURE 2-10A

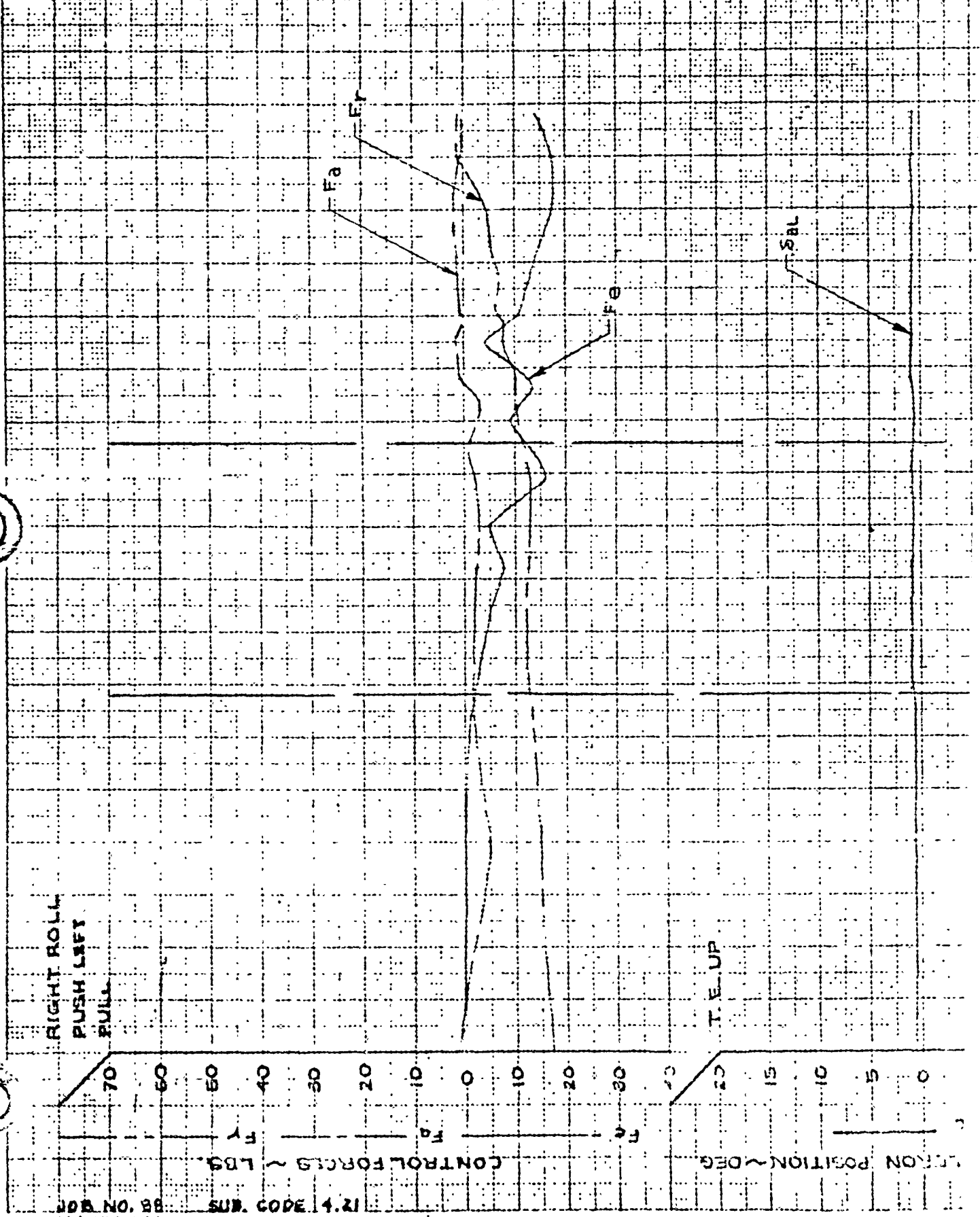


6008

ADS 168A

REVISED 12-17-65
 MBH

6443
ADS168B



JOB NO. 88

SUB. CODE 4.21

PREPARED BY JDB

DATE 9-24-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE D-252

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 68.6077

LAC 6008

TEST DATE 9-23-65

FLIGHT 186

DROP NO 36

SHEET 2 OF 7

CARGO WT. 24,840 LB.

NOTE:

SEE FIGURE 40 SHEET 1 OF 2
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

10
9
8
7
6
5
4
3
2
1
0

T.E. LEFT

T.E. UP

RUDDER & ELEVATOR POSITIONS

DEGREES

5

4

3

2

1

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

LOAD RELEASE

LOAD CLEAR OF FRAME

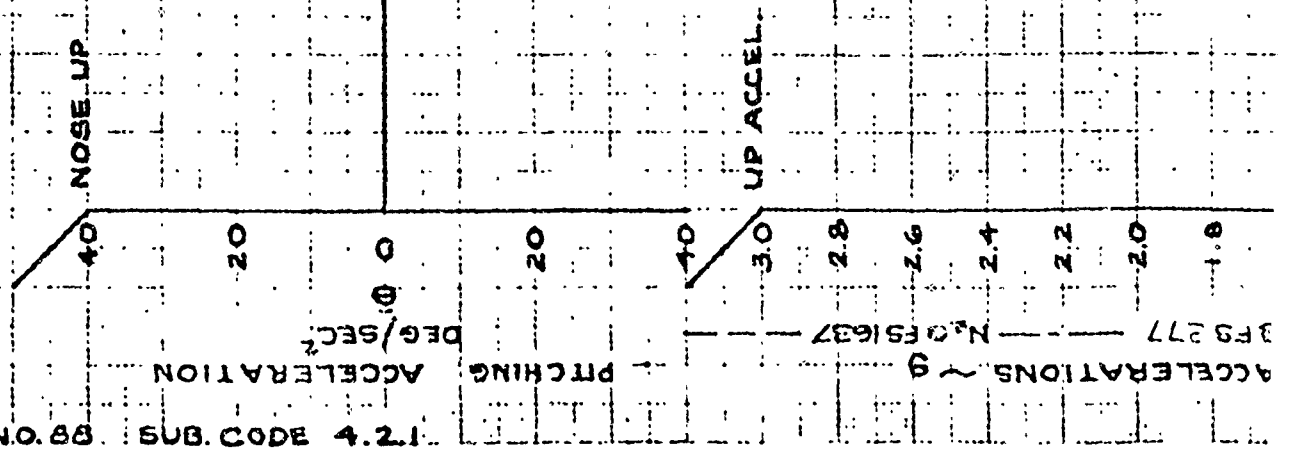
NO USEABLE SC DATA
BEYOND 6.0 SEC.

FIGURE D-403

6008
ADS1683

6008
AD316BC

NOTE: θ CALCULATED FROM NS DATA



JOB NO. 88 SUB. CODE 4.2.1

PREPARED BY MBH/DTM
 DATE 9-27-65
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE D-253

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AF 63-2077 LAC 6008
 TEST DATE 9-23-65
 FLIGHT 186 DROP NO 36

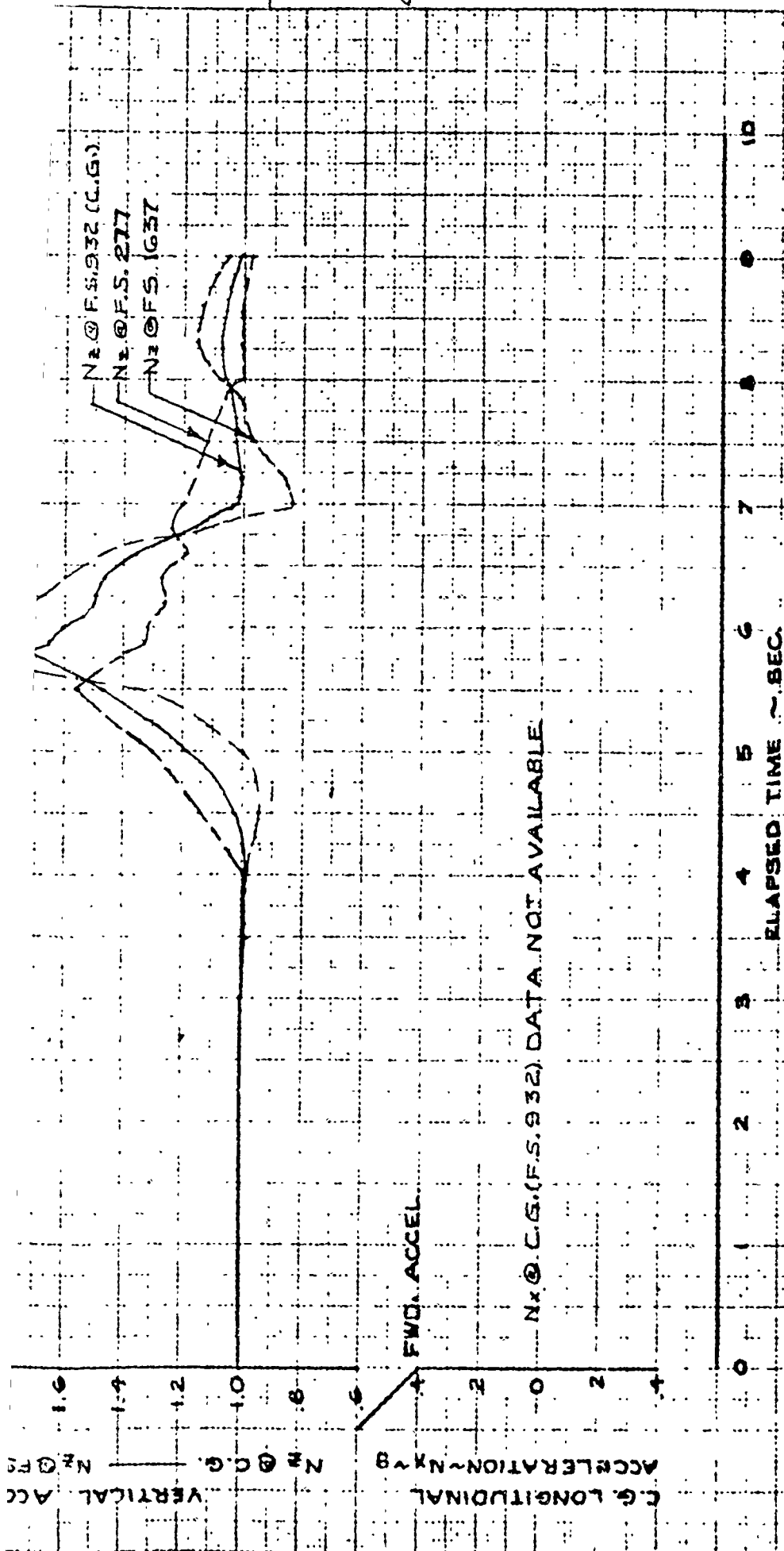
SHEET 3 OF 7

CARGO WT 24,840 LBS

NOTE:
 SEE FIGURE D-40C SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

FIGURE D-40C

6008
 ADS 68C





6008
ADS:ED

JOB NO. 88 SUB CODE 421

LOAD C.G. POSITION ~ FUS. STA

ACCELERATION g's

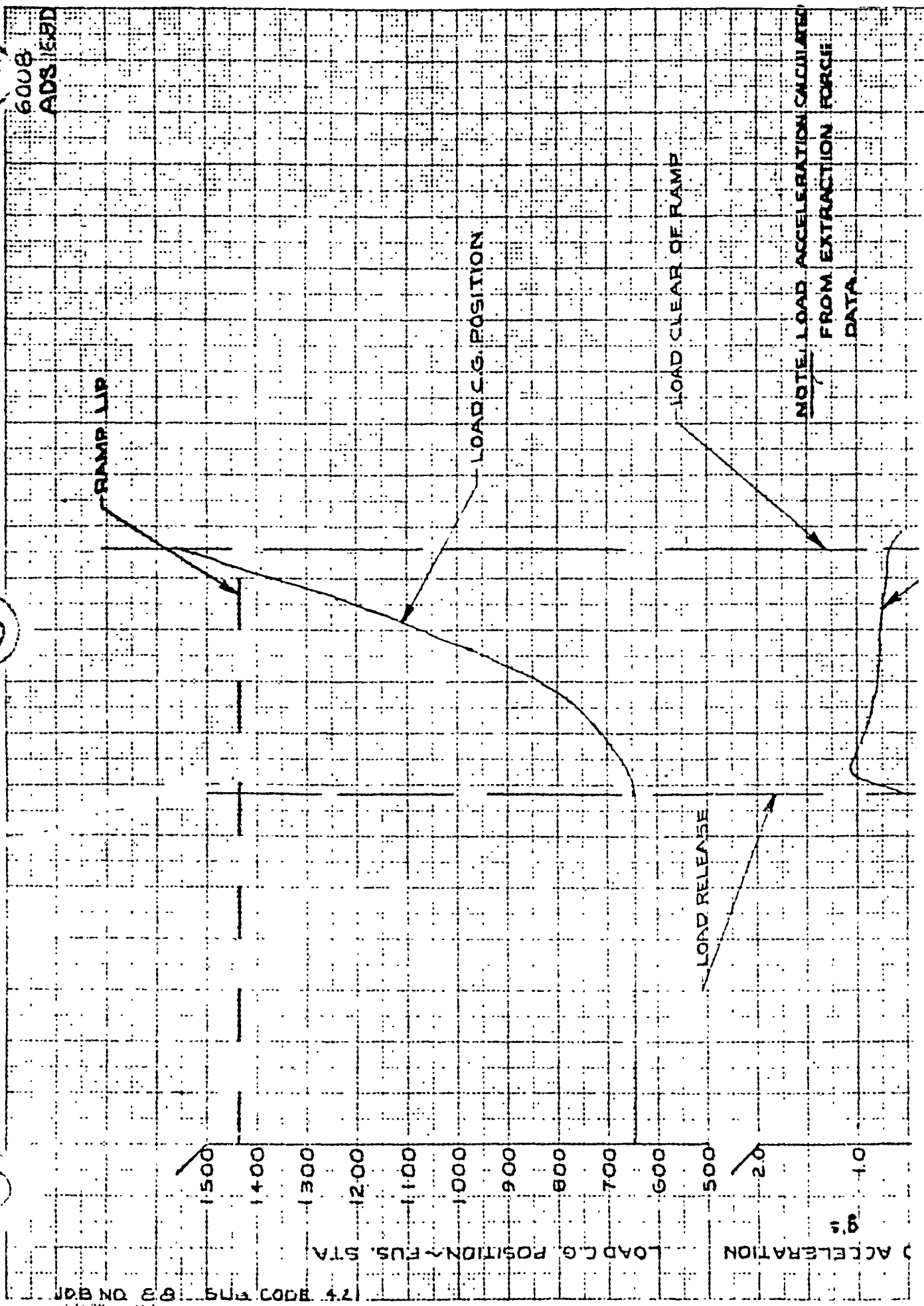
RAMP LIP

LOAD C.G. POSITION

LOAD CLEAR OF RAMP

LOAD RELEASE

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA



PREPARED BY JDG
DATE 9-24-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE D-254

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE 9-23-65
FLIGHT 186 DROP NO. 36
SHEET 4 OF 7
CARGO WT. 24,840 LBS

NOTE:
SEE FIGURE 40A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

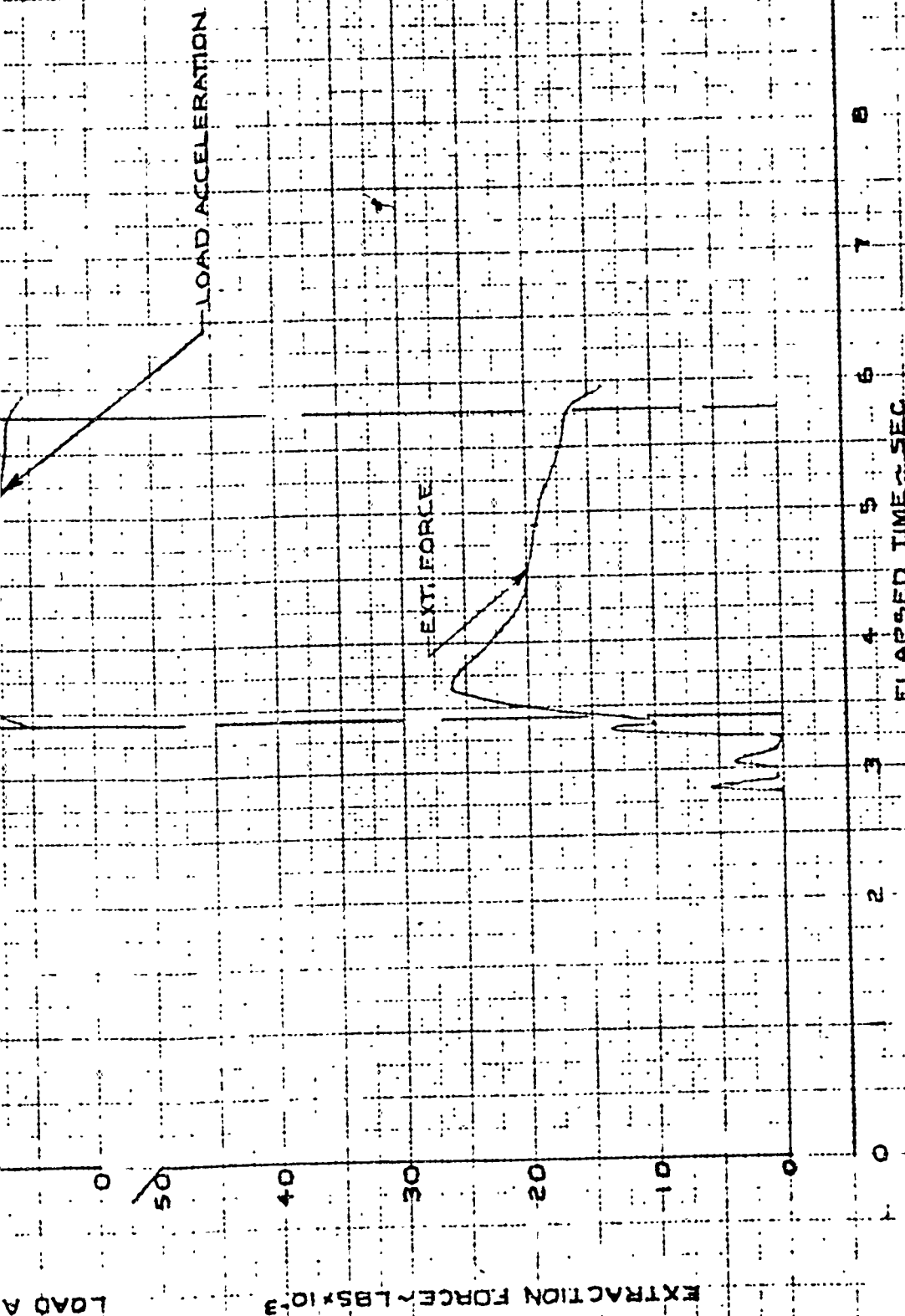


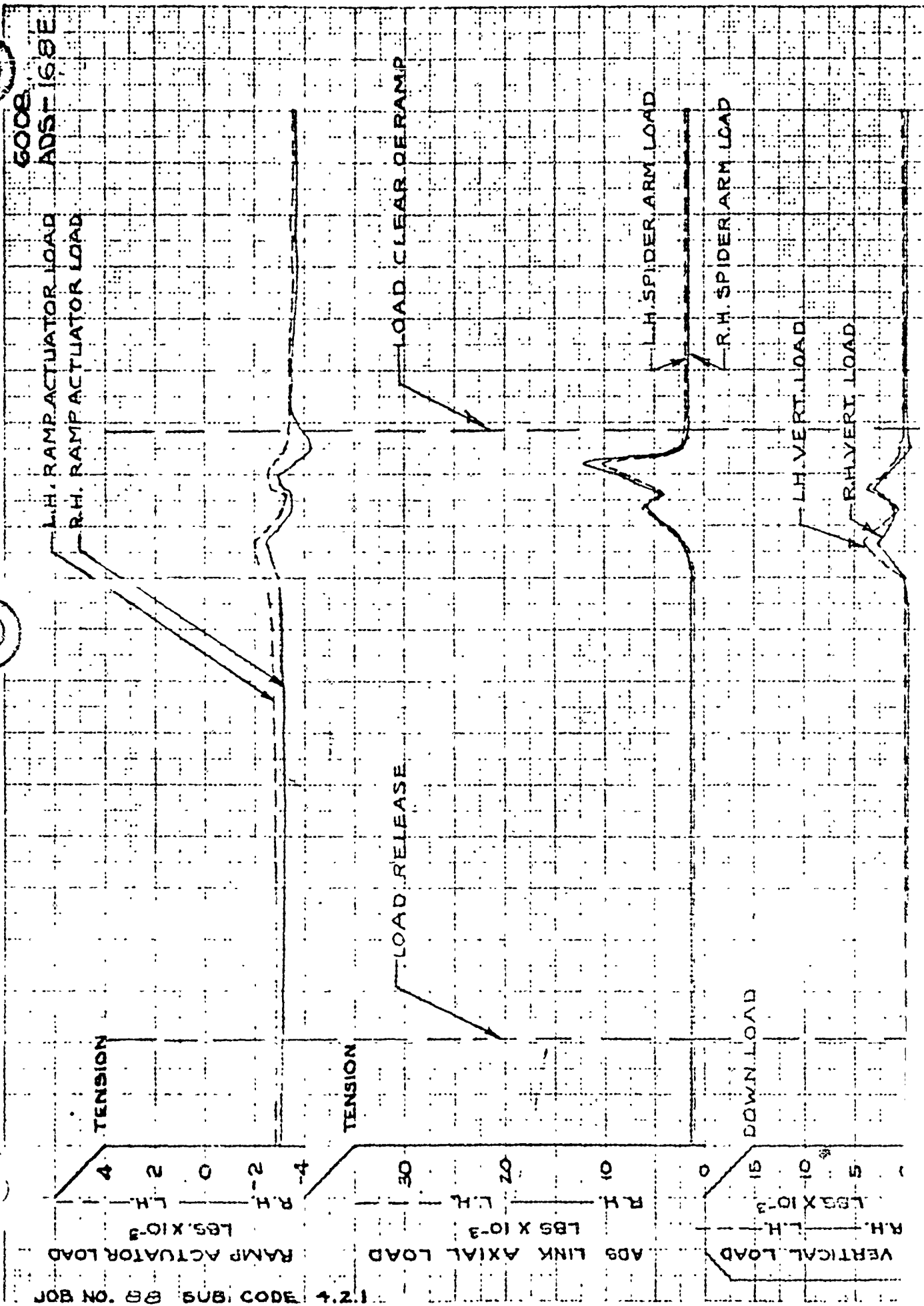
FIGURE D-40D

6008
ADS 168

7/26/84

1008

68.D



PREPARED BY MBH
DATE 9-23-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE D-255

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 9-23-65

FLIGHT 186

DROP NO. 36

SHEET 5 OF 7

CARGO WT. 21,840 LBS

NOTE:
SEE FIGURE 40A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC

SIDE LOAD

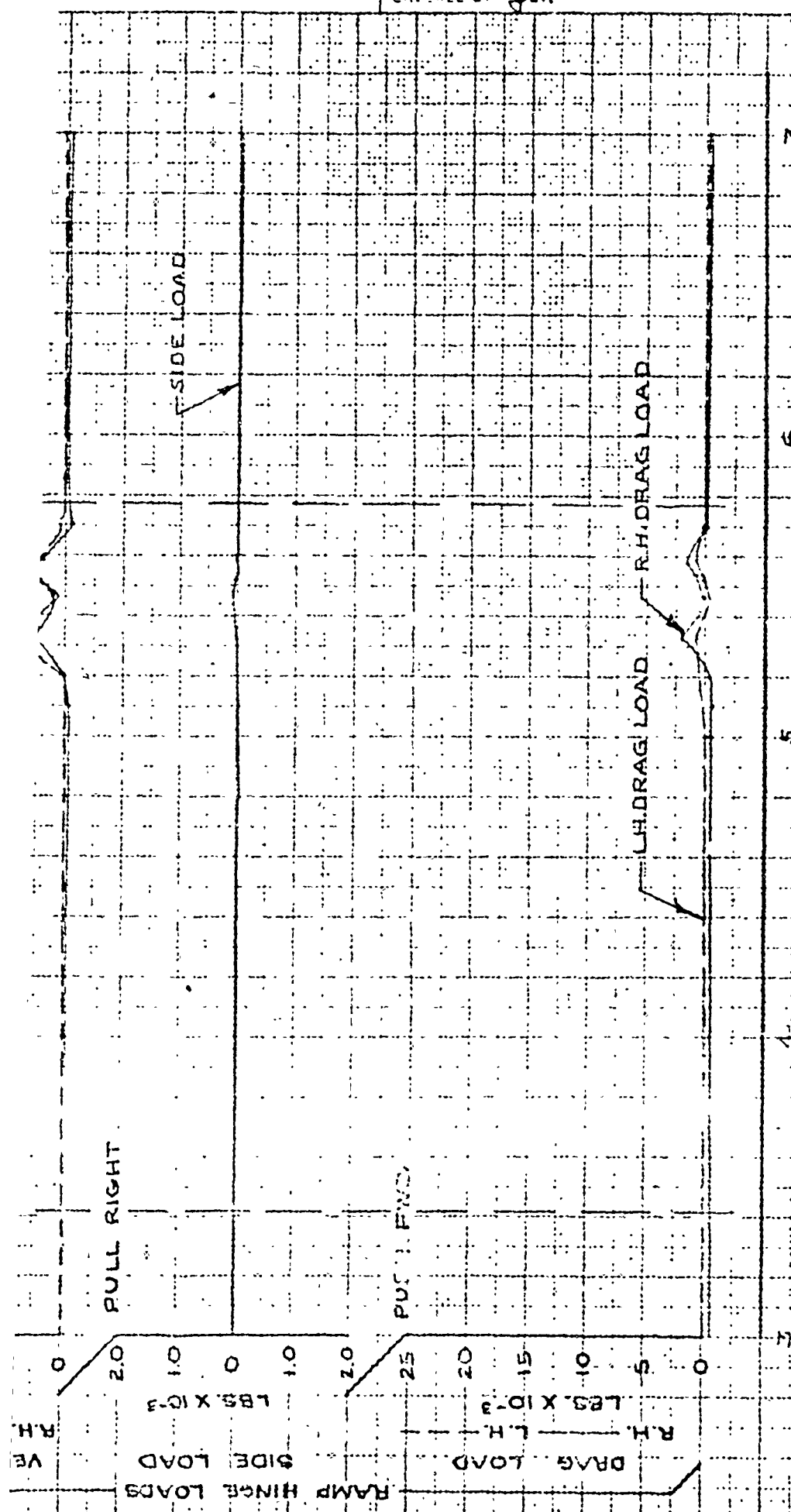
R.H. DRAG LOAD
L.H. DRAG LOAD

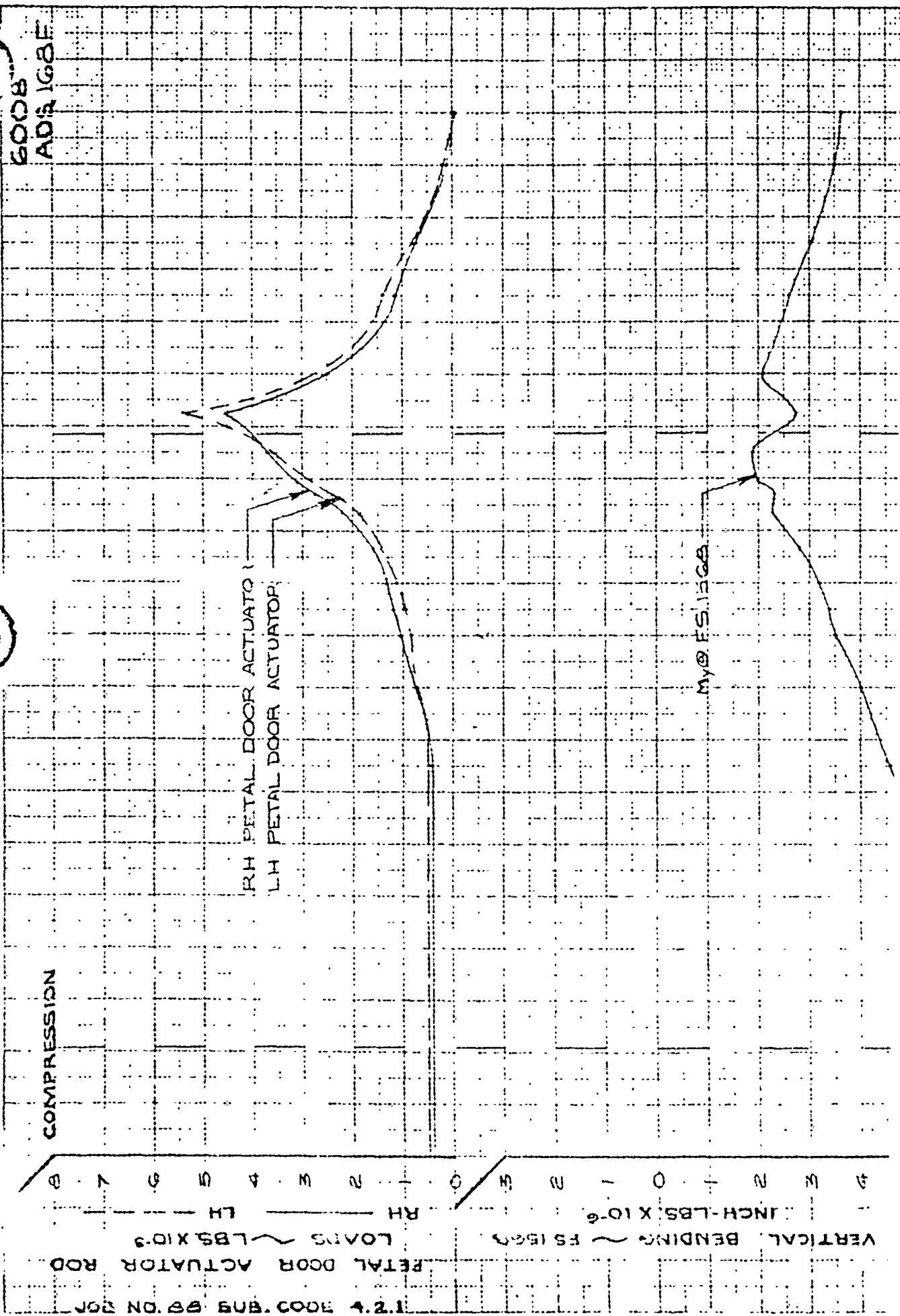
PULL RIGHT

PULL FWD

FIGURE D-ICE

6008
ADS-103





TIME HISTORY OF AERIAL DELIVER
MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE 8-23-65
FLIGHT 186 DROP NO 3
SHEET 6 OF 7
CARGO WT. 24840 LBS.

NOTE:
SEE FIGURE D-40F SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

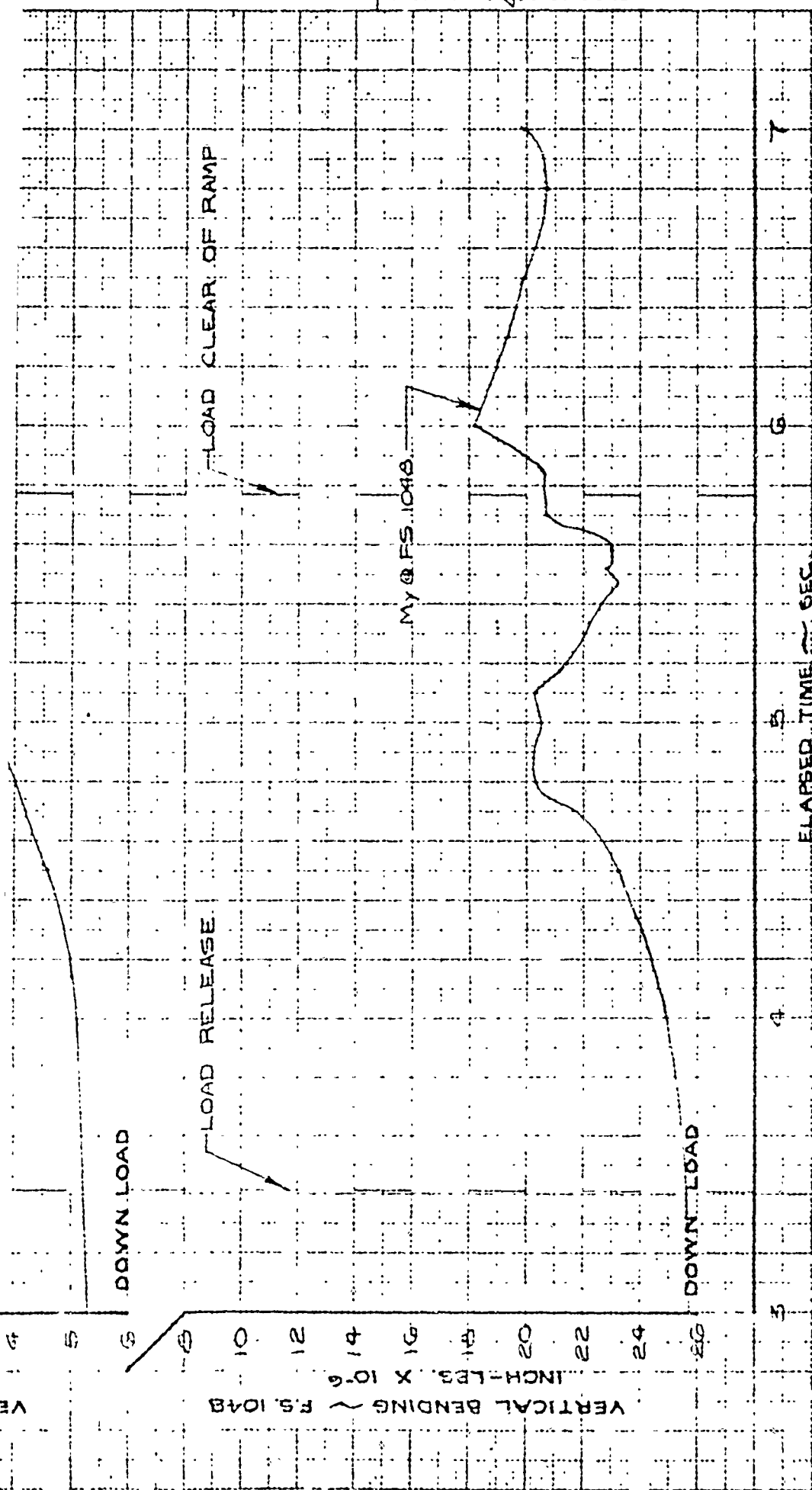
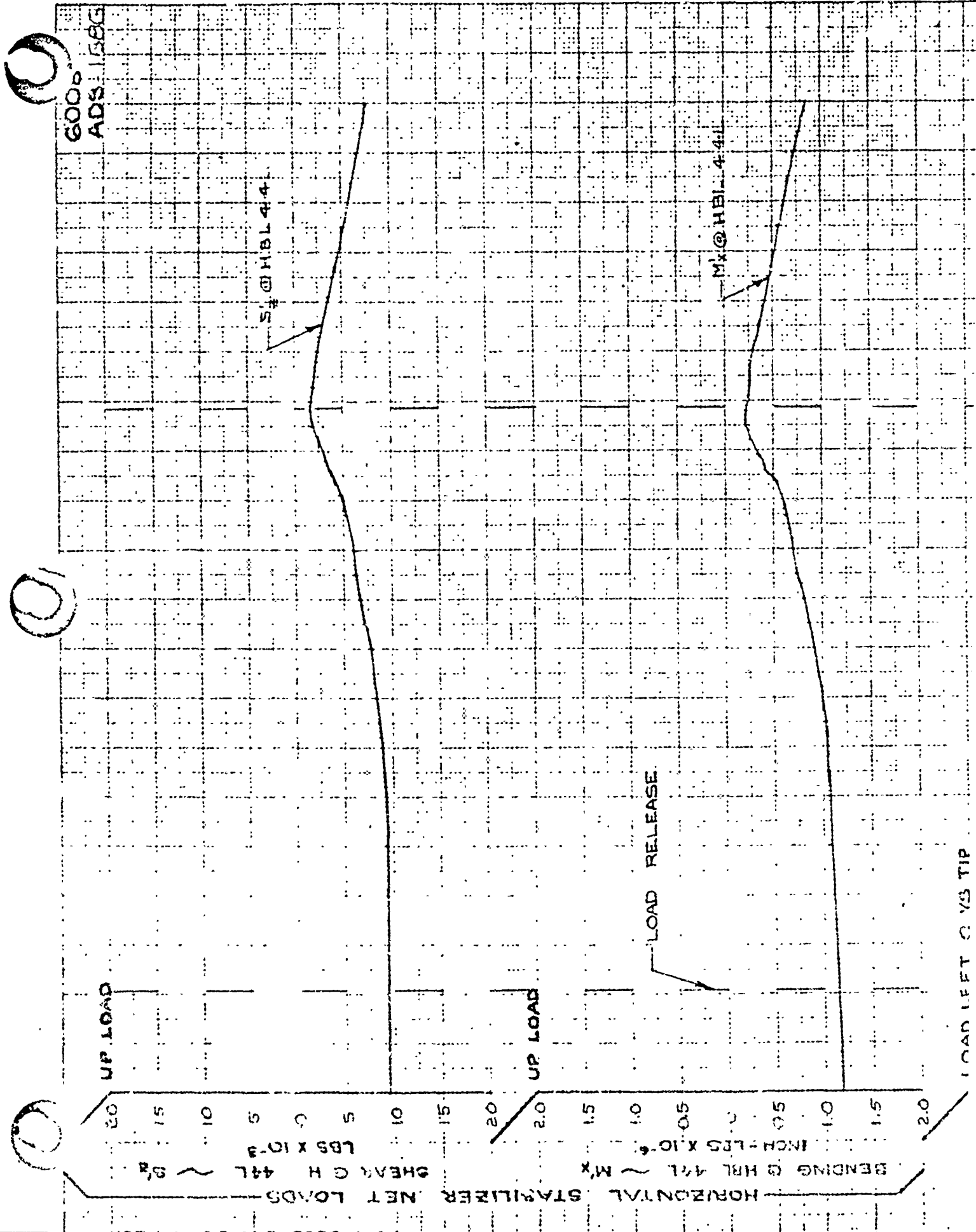


FIGURE D-40F

6008
ADS 16



PREPARED BY MBH

DATE 9-23-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE D-257

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE 9-23-65

FLIGHT 186

DROP NO 36

SHEET 7 OF 7

CARGO WT. 24,840 LBS.

NOTE:
SEE FIGURE D-406 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

M_X: V-5 344. NOT AVAILABLE

LOAD LEFT C VS TIP

LOAD CLEAR OF RAMP

VERTICAL STABILIZER NET LOAD
BENDING @ V53 345 ~ M_X
~ INCH-LBS X 10⁻⁶

FIGURE D-406

6008
ADS-1686

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. ER 5473
MODEL C-141A
PAGE E-1

APPENDIX E

ADU-117A	RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % N.A.C.	FLAP POS. δF ~ %	AIRSPEED V _E - KCS	ALTITUDE H _P - FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE β ~ DEG.	RUDDER POS. δF ~ DEG.	PITCH ANGLE θ ~ DEG.
1	1201	228000	22.0	0	140	4980	HIGH	0	0	8.7	
1A	1239				141	4980		-4.4	-5.1	9.0	
1B	1279				142	4720	*	-15.2	-28.8	6.3	
1C	1351				138	4730		4.4	10.5	10.9	
1D	1385			↓	140	5040	*	15.4	29.1	8.0	
2	1754	227000	22.0	20	136	5020		0.4	0	9.0	
3	1835			50	126	5190		0.2	0	6.0	
3A	1883				124	5080	*	-13.2	-31.6	6.0	
3B	1962			↓	126	4960	*	13.6	32.6	6.0	
4	2054	223000	22.0	88	118	4980		0	0	5.5	
4A	2094				118	4980		-5.3	-11.6	5.5	
4B	2131				118	4990	*	-10.7	-32.1	5.6	
4C	2182				118	5050		6.5	14.0	5.0	
4D	2212			↓	118	5020	*	11.8	32.6	4.7	
5	2221	221000	21.5	0	160	5020		0	0	6.0	
5A	2673				159	4840	*	-14.1	-27.5	4.8	
5B	2741			↓	160	4720	*	14.3	27.5	5.0	
6	2819			88	160	5020		0	0	-0.6	
6A	2853				159	5100	*	-11.5	-27.2	-1.3	
6B	2903			↓	160	4940	↓ *	11.2	25.9	-1.0	
7	3047	219000	21.5	0	180	5100	LOW	0	0	2.7	
7A	3101				180	5100		-4.9	-6.7	2.9	
7B	3151				180	5050		5.6	7.3	2.7	
8	3243	217000	21.5	↓	200	5000		0.8	0	2.6	
9	3964			50	200	5150		0.1	0	-2.6	
9A	4038				199	5100		-3.6	-6.7	-2.6	
9B	4075				199	5000	*	-5.2	-9.4	-2.2	
9C	4099				200	5000		4.9	6.7	-2.2	
9D	4114			↓	200	5000	*	5.6	8.1	-2.6	
10	4568	211000	21.9	88	200	5020		0.1	0	-4.6	
10A	4604				200	5000	*	-4.2	9.2	-6.0	
10B	4631			↓	200	4960	↓ *	5.1	8.6	-6.2	

PAGE 2
MODEL C-141A

FLIGHT~ 161

DATE ~ 7-30-65

LOADS - LBS

+ ~ COMPRESSION

R.H. DOOR

L.H DOOR

MIN.	MAX.	MEAN	MAX.	MIN.	MEAN
------	------	------	------	------	------

PETAL DOOR
POSITION - DEG

ADS-17A

AF63-8277 AC 6008
FLIGHT ~ 162
DATE ~ 8-3-65

PETAL DOOR ACTUATOR
LOADS ~ LBS
+ COMPRESSION

L.H. ANGLE θ - DEG.	ANGLE OF ATTACK - DEG.	BANK ANGLE φ - DEG.	R.H. DOOR			L.H. DOOR			PETAL DOOR POSITION - DEG.
			MAX	MIN	MEAN	MAX	MIN	MEAN	

5	9.1	-22	2900	1200	2030	3070	1860	2500	38
20	10.2	-1.09	2070	970	1490	3000	1900	2380	
16	9.9	0	1490	120	800	3100	1950	2550	
18	9.6	-3.05	2900	1300	2070	2900	1480	2190	
20	9.9	-3.05	2660	1630	2290	1950	480	1290	
7.8	8.6	0	2830	1160	1960	3070	1810	2430	
6.9	6.4	-1.5	2360	900	1600	2620	1190	1980	
7.5	5.8	-1.3	2520	1110	2000	2190	1120	1640	
7.1	6.6	-2.18	1770	640	1040	2980	1710	2310	
4.6	5.8	0	1370	-20	640	1480	520	1170	
6.3	4.4	+2.1	2850	1250	2100	950	-670	190	
6.5	5.4	-4.8	500	-850	-160	2830	1570	2330	
6.9	6.9	-1.7	N.A.	N.A.	2550	N.A.	N.A.	3140	
7.4	5.4	0	3230	1300	2190	3690	2190	2900	
7.0	6.9	-3.3	3510	870	2780	3690	2240	3050	
1.3	1.4	-1.3	2660	1160	1960	2900	1670	2190	
3.8	5.1	-4.4	4130	2570	3090	4260	2550	3520	
3.4	3.5	-6.5	4830	2660	3610	5230	2950	3950	
4.1	3.8	-4.4	5860	3840	5020	4000	1950	3140	
5.5	3.5	-2.1	5960	4150	4950	4100	2260	3070	
NA	NA	NA	NA	NA	NA	NA	NA	NA	
5.6	3.3	-2.2	4290	2220	3120	7330	5000	6100	
1.0	1.7	0	4670	2500	3610	5360	2900	4260	
1.0	-4.0	-6.5	3650	1860	2800	3810	2100	3020	
0.5	-1.5	-1.3	4030	6670	5020	4520	2030	3240	
0.7	-1.9	-4.1	5260	7420	4430	9620	6280	6380	
4.7	-3.1	-1.7	-470	-2230	-1290	-430	-2400	-1330	
4.6	-3.4	-6.4	NA	NA	-2990	6140	3520	4950	
4.1	-3.6	-6.65	6910	4460	5590	-1190	-4240	-3380	

- NOTE:
- * ~ BOOST CUT-OFF
 - STROKE LENGTH ~ 13
 - TIME CORR. IN-
OPERATIVE FOR RUNS
2 THRU 4B.
 - RAMP SIDE PANELS-

FIGURE E-13

6008
ADS-117C

RUN NUMBER	TIME CORR.	CRUISE ALT. FT.	FLAP POS.	AIRSPEED KNOTS	ALTITUDE HP FT.	WIND DIRECTION	WIND SPEED KNOTS	SLIP ANGLE DEG.	SLURR POS. DEG.
1262	234400	22.5	0	149	5065	HIGH	-0.8	0	9
1302			0	141	5060		-5.0	-6.21	9
1338			0	141	4830	*	-16.3	-28.87	10
1475			0	142	5005		6.0	-8.63	10
1507			0	143	4900	*	16.4	30.49	9
1768			20	142	5000		0.8	0.54	8
1832			50	130	5070		0.4	0.81	5
1879			50	130	5100	*	-12.7	-30.78	7
1924			50	130	5370	*	13.0	31.03	7
2006	229600	22.5	88	123	5135		0.5	0.81	6
2051			88	123	5075		-5.1	-9.17	6
2088			88	123	5020	*	-11.6	-4.32	5
2210			88	123	5075		5.8	11.33	
2240			88	123	5080	*	11.0	32.38	
2460			0	155	5140		0.9	0.81	
2510			0	157	5120	*	-14.4	-0.27	
2580			0	155	5440	*	14.5	27.52	
2680	227000	22.3	88	155	5450		1.3	1.35	
2727			88	156	5540	*	-12.2	-26.44	
2770			88	154	5690	↑ *	12.5	26.71	
2929			0	177	5245	LOW	1.2	1.35	
2980			0	180	5255	*	-4.8	-6.21	
3010			0	178	5425	*	5.8	8.36	
3095	225000	21.8	0	200	5530		0.5	0.81	
3440			50	191	5305		0.3	0.81	
3480			50	197	5295		-5.4	-8.09	
3498			50	196	5235	*	-5.7	-8.90	
3537			50	198	5130		5.0	7.55	
3556			50	199	5105	*	4.6	7.01	
3617	222000	22.0	88	197	5065		-0.6	-0.27	
3640			88	196	5100	*	-4.4	-10.25	
3689			88	198	5055	↑ *	4.1	7.21	

FETAL DOOR ACTUATOR

LOADS ~ LBS

+ - COMPRESSION

R.H. DOOR

LH 1227.2

PETAL 5000
POSITION - DEG

PIT	ANG	AT	MAX	MIN	NEAR	WALL	MEAN	PE	PO	DATE	TIME
93	9.0	0	5473	3773	4798	5482	3365	4706	65		
99	9.7	-0.87	5590	3540	4565	6024	3906	5106			
10.1	7.3	-5.00	4215	2329	3214	7859	5694	6659			
10.1	10.0	-1.96	6149	4402	5310	5624	3485	4306			
93	10.5	-3.92	8338	6079	7243	4377	2282	3059			
8.0	7.3	-0.65	5630	3722	4772	5254	3446	4266			
56	5.8	0	5249	3197	3985	4410	2868	3760			
7.3	4.3	-1.74	5655	4104	4772	5332	4073	4820			
7.9	6.0	-1.74	6275	4677	5488	5302	3952	4724			
2.8	4.1	-0.65	3555	1551	2529	3639	1398	2506			
4.5	4.6	-1.96	4414	1933	3507	3422	1157	2145			
5.1	4.0	-1.74	5178	3293	4199	4916	2747	3760			
5.4	4.1	1.09	3746	1002	2243	4193	48	3229			
5.7	4.2	-0.22	4629	2863	3651	4916	2627	3736			
7.9	8.0	-1.74	NA	NA	NA	5718	3741	4565			
10.2	6.0	1.31				7600	5577	6447			
9.2	7.6	-1.31				4600	3035	3882			
-0.1	-0.4	0				3254	964	2439			
0.2	1.0	-0.65				6218	3567	5013			
3.2	-0.2	-2.18				9062	6507	8074			
4.9	5.7	0.87				7085	4916	5832			
6.0	6.0	-0.65				7471	5591	6579			
6.4	5.6	-0.87				7929	4989	6820			
4.4	4.2	-0.87				8628	5519	6989			
-0.3	1.0	-0.65				7461	4444	5901			
-0.5	-1.3	-2.83				5876	2913	4395			
-1.6	-1.5	-0.44				5876	2036	4617			
-1.0	-1.8	-2.37				9506	6493	8321			
2.1	-1.5	-2.18				5901	6790	8395			
7.3	-3.5	-1.31				3852	370	1753			
5.3	-3.4	-2.61				3136	370	1876			
1.7	-4.7	-3.46	Y	Y	Y	7629	3753	5580	1		

NOTE:

1. * ~ BOOST CL

2. STRAKE LENG

3. RAMP SIDE PAI

6008

ADS-

141A
 65

6008
 ADS-117B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % N.A.C.	FLAP POS. δF ~ %	AIRSPEED K ~ KCAS	ALTITUDE HP ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDELIP PRES.	SIDELIP ANGLE δ ~ DEG.	RUDDER POS. δ ~ DEG.
4034		221000	21.5	0	138	4705	HIGH	0.60	0	
4069					138	4750		-4.90	-8.36	
4097					138	4805	*	-14.40	-30.76	
4150					136	4825		4.90	9.17	
4180					139	4775	*	14.20	1.08	
4250				20	150	4780		1.70	5.67	
4320		219600	21.3	50	120	4835		0.50	0.81	
4374					120	4790	*	-14.10	-26.17	
4440					120	4750	*	14.20	32.92	
4520				88	114	4970		0.50	1.35	
4667					114	4960	*	-12.90	-32.11	
4715					113	5095	*	11.50	32.92	
4820				0	155	5315		0.60	1.08	
4865		217600	21.5	0	155	5125	*	-13.70	-27.79	
4900				0	155	5025	*	13.00	28.06	
5033				50	158	5040		1.10	1.08	
5122		216600	21.5	0	175	5225	LOW	1.00	1.08	
5270					200	5125		0.60	1.35	
5310					200	5330		-5.60	-7.82	
5332					198	5440	*	-6.40	-9.98	
5389					198	5440		5.80	9.17	
5411				0	200	5450	*	5.90	9.44	
5451				20	200	5580		0.50	0.81	
5509		212400	21.8	50	198	5500		0.40	1.08	
5523					198	5515	+	-7.00	-17.70	
5512					200	4920	*	5.90	9.17	
5563				88	200	5080		0.50	0.81	
5574					198	5270	*	-6.40	-11.33	
5627					198	5365	Y *	5.80	9.44	

CUT-OFF
 NGTH~62"
 PANELS-OFF

F-1C

08
 117C

DATE ~ 8-3-6

+ ~ COMPRESSION

L.H DOOR

PETAL DOOR
POSITION ~ DEC

6005
ADS-

6008
ADS-117E

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % M.A.C.	FLAP POS. δ ~ %	AIR SPEED V _e - KCAS	ALTITUDE H _h - FT.	RUDDER BOOST SYSTEM PRES.	SIDELIP ANGLE β ~ DEG.	RUDDER POS. δ ~ DEG.	PITCH ANGLE θ ~ DEG.
3897		245,200	25.8	0	149	5000	HIGH	0.70	1.62	N.A.
3979								*-14.55	-27.52	
4098				1				*13.95	26.17	
4469				20				-0.40	0.27	
4535				50				-0.40	0.54	
4593		239,200	25.7	88				-0.50	0.27	
4636								*-13.35	-28.33	
4677					1			*12.15	28.06	
4793					122			-0.40	0	
4835								*-12.3	-31.30	
4882				1	1			*11.1	31.84	
5016				0	160			-0.50	0	
5095		236,300	25.5	88	1			-0.40	-0.27	
5230				0	180		LOW	-0.20	0.27	
5331		235,200	25.1		200			-0.40	0.27	
5358								-5.2	-7.55	
5395								*-6.75	-9.44	
5431								5.4	8.09	
5456				1				*5.50	9.17	
5785				50				-0.40	-0.27	
5851		239,100	25.3	88				-0.60	-0.27	
5884								*-5.10	-11.06	
5926				1	1	1	1	*3.60	8.36	1

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G.	% M.A.C.	FLAP POS. % ~ %	AIRSPEED K ~ KCAS	ALTITUDE HR ~ FT.	RUDDER BOOST SYSTEM PRES.	SIDESLIP ANGLE DEG.	RUDDER POS. DEG	PITCH ANGLE DEG
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GA FORM 904A-2 JOB NO 69

ADS-117F

6008
ADS 148A

	RUN TIME	TIME CORR.	WGT. LIGHT LBS	C.G. IN	FLAP 10% SP. 1/2	WINGSPAN IN	ALTITUDE HP - F.T.	RIDER POST SYSTEM POS.	SIDELIP ANGLE DEG.	RIDER POST SYSTEM POS.	WINGSPAN IN
1	1360	224600	24.0	0	145	5015	HIGH	1.6	1.6	N.A.	
1A	1442				145	5150		-4.3	-6.5		
1B	1490				138	4950	*	-15.2	-29.7		
1C	1577				144	5045		5.8	7.6		
1D	1599				145	5025	*	14.9	30.8		
2	1825			20	143	5025		1.3	1.4		
3	1855	223,600	24.5	50	144	5120		1.4	1.4		
3A	1970				145	5050	*	-13.8	-29.4		
3B	2015				144	5075	*	-14.2	30.2		
4	2061	219,600	24.5	88	144	5100		0.8	1.6		
4A	2121				140	5130		-5.6	-10.8		
4B	2142				144	5175	*	-13.0	-29.9		
4C	2222				143	5060		5.9	10.5		
4D	2249				142	5215	*	12.6	30.2		
5	2271				118	4980		0.8	1.35		
5A	2666				119	5110		-4.3	-9.2		
5B	2694				120	5120	*	-12.1	-31.8		
5C	2756				119	5060		5.5	11.6		
5D	2790				118	5020	*	12.4	33.2		
6	3090			0	162	5040		1.6	1.6		
6A	3128				161	4970	*	-13.8	-26.7		
6B	3166				161	5020	*	14.0	27.8		
7	3274			88	160	5220		0.8	1.6		
7A	3306				160	5190	*	-11.8	25.9		
7B	3345				160	5395	*	11.6	25.9		
8	3515	215,800	24.2	0	142	5025	HIGH	1.1	1.6	N.A.	
8A	3575				142	4885		-5.2	9.1		
8B	3618				138	4580	*	-12.3	-32.3		
8C	3710				143	4650		6.4	10.3		
8D	3750				143	4450	*	14.6	31.8		
9	3850			20	141	5070		1.1	1.6		
10	3959			50	140	5100		1.6	1.6		
10A	4070				142	5010	*	-13.4	30.2		
10B	4104				141	5100	*	14.4	30.8		
11	4200			88	140	5100		1.1	1.6		
11A	4235				138	5150	*	-13.6	-30.8		
11B	4273				140	5255	*	13.9	29.7		

PETAL DOOR ACTUATOR

LOADS - LBS

+ COMPRESSION

R.H. DOOR

L.H. DOOR

										NOTES:		
A.	9.1	1.9	3900	2340	2960	3670	2450	2950	65	1. # ~ BOOST CUT-OFF		
	8.2	-0.9	3740	1880	2800	4260	3110	3560		2. RAMP SIDE PANELS ~ ON		
	8.9	-1.4	1960	560	1180	6550	4680	5580		3. NO STRAKE		
	9.1	1.7	4330	2720	3550	4160	2230	3090		4. ① ~ R.H. Door < -2420		
	9.1	1.3	6560	4280	5140	3210	1130	2180		5. ① ~ L.H. Door < -3280		
	7.9	-1.3	3740	2180	2880	3730	2490	2950				
	3.4	0.4	3520	1430	2470	3650	1940	2700				
	3.2	-1.7	5080	3470	4380	5970	4430	5320				
	4.1	3.4	6290	4170	5220	5320	4040	4640				
	-0.6	0	2210	0	1020	2330	250	1380				
	0.9	-2.9	4220	1800	3390	2250	-80	1200				
	0.9	-6.7	9330	6000	8370	5870	2780	4840				
	-0.1	0.9	2260	-460	1050	4040	1940	3090				
	-0.6	4.9	5620	2720	4030	8630	6180	7480				
	5.2	1.7	2230	480	1400	2370	1050	1630				
	4.7	0	2610	990	1860	2180	-80	1110				
	4.0	-1.1	4140	2120	3250	3380	1440	2430				
	4.7	0.9	1880	-160	830	2720	1200	2040				
	4.7	2.1	2770	830	2040	3650	2270	2990				
	6.6	1.5	4550	2100	3170	4410	2600	3480				
	5.3	-3.2	3820	1590	2640	6760	4760	5670				
	6.8	0.9	6700	4870	5680	4000	2410	3210				
	-2.7	-2.3	2290	-730	590	2100	-210	830				
	-0.8	-6.3	11410	8450	10300	6320	3340	4640				
	-2.3	-1.9	5600	3070	4460	10100	8300	9270				
N.A.	9.0	-1.7	650	-860	-240	660	-660	0	38			
	8.1	0.9	0	-1530	-730	470	-1010	-250				
	8.6	2.9	0	-2150	-1180	-40	-1320	-480				
	8.9	-0.2	160	-970	-480	470	-1050	-450				
	9.1	2.3	-110	-1450	-910	80	-1550	-600				
	7.3	0.2	190	-990	-430	740	-540	-60				
	3.7	1.3	4730	-400	-910	310	-740	-210				
	2.6	0.2	3250	1370	2230	-1940	①	-1810				
	3.1	1.9	①	①	①	2720	1600	2700				
	-0.2	-1.5	-1370	①	-2100	-510	-2140	-1420				
	1.1	-0.2	4820	2580	3710	①	①	①				
	-0.1	0.9	①	①	①	4490	3110	3870				

FIGURE E-2A

6008
ADS 148B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	U.S. % N.W.C.	FLAP POS. deg	AIR SPEED KNOTS	ALTITUDE IN. FT.	THROTTLE POSITION	SLIP PERCENT	SLIP ANGLE DEG.	FLAP POS. deg	PITCH deg
12	43.71			88	115	5030	HIGH	0.8	1.6	N.A.	
12A	44.17			↓	115	5125	*	-12.0	-31.8		
12B	44.60			↓	115	5210	*	13.4	32.6		
13	47.66	209,600	24.3	0	159	5050		0.8	0		
13A	48.07			↓	159	5020	*	-0.7	-17.0		
13B	48.42			↓	160	5160	*	9.2	15.4		
14	49.58			50	160	5160	↓	0.6	0		↓
15	58.23	207,000	24.3	0	133	5330	HIGH	0	-1.1	N.A.	
15A	58.69			↓	129	5340		-5.4	-8.1		
15B	58.93			↓	121	5120	*	-16.2	-31.3		
15C	59.45			↓	140	4875	*	15.9	31.3		
15D	60.12			↓	137	5050		6.5	7.6		
15E	60.40			↓	139	4965	*	16.1	31.3		
16	62.80			20	133	5220		0.6	-0.5		
17	63.40			50	136	5445		0.6	-0.5		
17A	N.A.			↓	12V _s	5000		N.A.			
17B	N.A.			↓		5000		N.A.			
18	N.A.			88	↓	5000		N.A.			
18A	67.80	203,000	24.7	↓	132	4980		-5.0	-10.5		
18B	68.05			↓	134	5000	*	-12.0	-30.8		
18C	68.41			↓	133	5100		6.5	14.6		
18D	68.74			↓	133	5040	*	12.2	32.9		
19	70.56	200,000	24.7	↓	112	5160		0.6	0.5		
19A	70.91			↓	111	5000		-5.2	-10.5		
19B	71.24			↓	109	4940	*	-12.2	-31.8		
19C	71.71			↓	111	4780		6.3	11.6		
19D	71.98			↓	113	4670	*	12.3	33.5		
20	74.58			0	161	4950		-0.8	1.6		
20A	75.04			↓	158	4680	*	-14.3	-27.5		
20B	75.74			↓	162	4930	*	14.4	27.8		
21	76.48	197,600	24.5	88	161	5245		0.4	0.3		
21A	76.93			↓	161	5120	*	-11.3	-26.2		
21B	77.52			↓	159	5090	*	12.7	27.5		
22	78.53			0	180	5220	Low	0.6	0.3		
22A	78.96			↓	179	5020	*	-4.2	-6.2		
22B	79.33			↓	179	4920	*	6.6	8.4		
23	80.78	194,000	23.6	↓	199	5240	↓	0.2	0.5		↓



PITCH ANGLE
STRESS
ANGLE
ATTACH. DIM. DIA.
RANK ANGLE
STRESS

PETAL DOOR ACTUATOR

LOADS & RE.

+ DISCOMPRESSION

R.H. DOOR

L.H. DOOR

ER 5473

MODEL 2-141A

WIND 1 AC 6

15-165

DATE 8-13-65

Page E-9

Page E-9										
N.A.	5.5	0.2	-190	-1370	-780	190	-930	-370	38	NOTES:
	3.9	-2.5	2560	860	1770	-1940	0	-2970		1. * ~ BOOST CUT-OFF
	4.7	0.8	0	0	0	2100	1130	1850		2. RAMP SIDE PANELS ~ ON
	6.7	-0.4	80	-1690	-730	350	-1300	-450		3. NO STRAKE
	6.6	-2.1	190	-1640	-910	-820	-2560	-1530		4. 0 ~ R.H. DOOR <-2420
	6.6	-1.7	-670	0	-1800	510	-1300	-490		5. 0 ~ L.H. DOOR <-3280
	0.7	-1.1	-670	-2260	-1430	-410	-1830	-1130		
N.A.	9.6	1.1	3660	1830	2800	3790	2470	3010	65	NOTES:
	10.6	-0.8	3310	1670	2470	4020	2910	3520		1. * ~ BOOST CUT-OFF
	10.7	1.1	1560	-320	700	5750	4140	5280		2. RAMP SIDE PANELS ~ OFF
	9.3	0.6	6480	4490	5000	2370	510	1360		3. NO STRAKE
	10.0	0	4570	3230	3790	3810	2510	3050		
	10.3	-1.3	6160	4280	5270	2330	490	1200		
	9.2	-0.2	3750	1960	2720	3790	2490	2880		
	4.1	0	3390	1510	2310	1750	3240	2430		
	0.8	0.6	3500	1240	2370	1460	-330	580		
	1.2	1.1	6480	4470	5570	3980	1980	3270		
	0.3	-2.3	1780	-270	400	3540	2200	2640		
	0.5	-1.3	4220	2310	2580	6000	4490	4660		
	5.5	-0.4	2040	110	160	2000	620	1130		
	5.6	0.6	2310	700	1530	1500	20	660		
	4.5	-1.3	2900	1450	2100	2230	760	1400		
	5.5	-1.5	1400	-540	620	2430	1070	1790		
	5.0	0.2	2210	430	1260	2930	1500	2230		
	6.4	0.8	4570	2300	3630	4570	2900	3770		FIGURE E-2B
	5.0	0.8	3600	1610	2500	6660	4720	5670		
	6.4	1.7	6890	4950	3660	3900	2290	3050		
	-3.0	0.8	1450	-750	-80	1200	-760	40		
	-2.5	2.1	9930	7100	8630	4530	2860	3650		
	-2.7	-0.6	4680	2800	3580	9270	7250	8200		
	4.2	0.8	5700	3280	4170	5280	3240	4270		
	4.6	-0.8	6560	3770	5240	5890	3520	4550		
	4.2	2.3	5810	3770	4730	6590	4160	5500		
	3.0	-2.5	6080	3070	4680	5870	3170	4760		

FIGURE E-2B

* COMPRESSION

L. n. 135718

6002
ADS

008
ADS149A

	RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.B. % N.W.C.	FLAP POS. °	AIR SPEED KTS	ALTITUDE H.F.T.	RIDDER BOOST SYSTEM POS.	SIDELIP ANGLE °	RIDDER POS. °	WITCH ANGLE °
1	1191	228500	24.5	0	178	5000	LOW	0.3	0	NA	
2	1271				200	5320		0.3	0		
2A	1392				200	5405		-4.5	-9.00		
2B	1413				202	5395	*	-6.2	-12.02		
2C	1462				200	5425		6.1	10.15		
2D	1481				199	5380	*	6.1	11.22		
3R	1657	225600	24.5	20	201	5420		0.3	0		
4	1753			50	200	5130		0.3	-0.27		
4A	1788				199	5150	*	-6.2	-12.02		
4B	1830				200	5050	*	5.6	10.42		
5	1887			88	200	5025		0.3	-0.53		
5A	1920				200	5110	*	-5.9	-12.02		
5B	1950				199	5130	*	6.0	10.68		
6	2156			0	179	5180		-0.1	-0.53		
6A	2193				180	5200		-5.0	-7.21		
6B	2235				180	5220		6.2	9.35		
7	2305	222000	24.1		201	5370		0.7	0.80		
7A	2344				200	5325		-5.3	-8.28		
7B	2366				199	5270	*	-6.2	-9.88		
7C	2404				198	5220		5.7	8.01		
7D	2424				201	5210	*	5.7	8.81		
8	2714			50	200	5145		-0.3	-0.80		
9	2780			88	200	5065		-0.1	-0.80		
9A	2804				201	5120	*	-4.7	-10.68		
9B	2840				200	5180	*	4.0	9.08		
10	3020	218600	24.5	50	116	4970	HIGH	11.8	32.32		
11	3120				140	5200		0	-0.53		
11A	3157				140	5120	*	-13.3	-30.18		
11B	3200				139	5010	*	13.3	28.85		
12	3272	216600	24.4	50	140	5025	*	12.6	26.19		
13	3750	215000	24.1	0	139	4980		0.3	2.94		
13A	3785				140	4935		-5.5	-5.34		
13B	3811				139	4895	*	-10.4	-19.96		
13C	3851				140	4940		5.7	8.01		
13D	3880				141	5120	*	11.7	23.50		
14	3987			20	141	5330		0	0.80		
15	4032			50	140	5335		0.1	0.80		

PETAL DOOR ACTUATOR

LOADS - LBS.

+ COMPRESSION

R.H. DOOR

L.H. DOOR

ER 5473

Page 21-141A

AFSC E-1 AC 612

21 Dec 1966

DATE 8-16-65

ANGLE OF
ATTACHMENT
RAMP SIDE
ANGLE OF
DES.

PETAL DOOR
POSITION - DES.

	WAVE	M.P.	FEED	WAVE	M.P.	FEED	WAVE	M.P.	FEED
5.1	0	470	-1360	-450	760	-1240	-440	38	
3.6	1.84	210	-2420	-1100	190	-1910	-1050		
4.0	0	1260	-1100	-30	-1620	-3680	-2710		
4.0	-0.20	1650	-890	80	-1910	-3720	-3220		
3.8	0	-1310	-3940	-2910	1810	-860	150		
3.9	0	-1730	-4200	-2810	1720	-900	170		
2.8	0.82	160	-2470	-1500	-20	-2340	-1490		
-1.4	0	-970	-3070	-2000	-760	-2840	-1910		
-1.0	-0.61	3150	580	1680	-4140	-6500	-5490		
-1.4	-0.82	-4100	-7040	-5300	2760	670	1700		
-2.8	0	-3040	-4520	-4100	-2040	-4780	-3680		
-2.8	0	3040	1260	2280	①	①	①		
-2.8	0.82	①	①	①	3030	1320	2210		
5.4	0.41	5140	2840	3680	5530	3530	4330	65	
5.6	-0.82	5780	3150	4410	5970	3910	4990		
5.2	-0.41	5670	3310	4460	6840	4360	5360		
3.7	-0.20	5410	2360	4020	6120	3300	4780		
4.1	-0.61	6640	3990	5330	6160	3720	5090		
4.2	0	7100	4540	5560	6460	4290	5390		
3.7	1.43	6040	2990	4650	7620	4710	6020		
3.9	0	6040	3410	4520	7300	4710	5930		
-1.4	-0.61	8030	2780	3810	5240	2730	3930		
-2.5	0	1780	-580	680	2690	-290	760		
-2.5	-2.24	6820	1780	4720	2800	-740	820		
-2.5	0	2340	-1050	370	6080	2040	4120		
5.4	1.43	-1550	-3410	-2420	2420	1330	1770	38	
0.7	0	-240	-1630	-1050	-250	-1920	-1070		
1.5	0	4990	2440	3730	-2610	-4590	-3600		
0.7	0.41	-3200	-4830	-3940	4980	3370	4160		
3.8	0	-1680	-2940	-2280	2920	1720	2290		
9.6	-0.20	1630	-1050	1020	1940	-1280	1320	38	
9.8	-2.45	1000	-320	340	1520	320	880		
9.7	0.82	790	-1050	-80	1090	170	690		
9.8	2.86	1200	50	660	1200	170	650		
9.8	0.82	1100	-420	420	1120	-820	20		
5.8	1.43	1580	210	790	1660	670	1180		
4.5	0	1050	-100	680	1550	400	740		

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ Q1
3. NO STRAKE
4. ① R.H. DOOR ~ 7035
5. ① L.H. DOOR ~ 6690

FIGURE E-3A

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ Q
3. NO STRAKE
4. ① R.H. DOOR ~ 7035
5. ① L.H. DOOR ~ 6690

9000
ADS149B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % N	FLAP POS. SF %	AIRPEED KTS KCAS	ALTITUDE H.F. - F.T.	WINGER BOOST SYSTEM PRES.	SIDESLIP ANGLE DEG	RUDDER POS. DEG	PITCH ANGLE DEG
15A	4134			50	138	5140	HIGH	-12.9	-26.18	NA
15B	4178				138	5095	*	13.0	28.05	
16	4308			88	139	5170		0.1	-0.53	
16A	4338				138	5160	*	14.3	-29.65	
16B	4377				139	5165	*	13.9	29.64	
17	4469	211,600	24.6		113	5160		-0.7	-0.80	
17A	4502				114	5095	*	-11.8	-32.32	
17B	4542				114	5195	*	13.0	31.52	
18	4642	210,800	24.2	0	160	5380		1.2	2.14	
18A	4681				159	5270	*	-12.0	-24.04	
18B	4735				159	5040	*	13.8	28.58	
19	4789			50	161	5150		0.3	0	
20	4831			0	179	5100		0.1	-1.07	
21	4953	209,600	24.2		200	5265		0.1	-0.53	
21A	NA				200	5280		-5.4	-8.81	
21B	5009				199	5180	*	-8.9	-17.36	
21C	5041				202	5020	LOW	6.0	8.55	
21D	5058				199	5070	*	5.8	8.01	
21E	5135				201	5020	*	-6.5	-11.75	
22	5188			20	201	5150		0.3	-1.07	
23	5243	207,400	24.5	50	201	5130		0	-1.34	
23A	5272				199	5180	*	-7.5	-11.75	
23B	5311				202	5090	*	6.0	6.94	
24	5443			88	200	5335		0.1	-1.60	
24A	5469				200	5480	*	-6.5	-12.55	
24B	5512				201	5190	*	5.6	8.28	
25	5618	205,600	24.3	0	201	5040		-0.2	-1.60	
25A	5672				200	5225		-5.1	-8.55	
25B	5696				200	5245	*	-5.9	-10.95	
25C	5731				199	5245		NA	NA	
25D	5749				199	5230				
26	5838			88	200	4870				
26A	6055				200	5105		-0.1	-1.34	
26B	6085				198	5250	*	-4.9	-9.62	
26B	6119				201	5280	*	4.9	6.68	
27	6202				134	5105	HIGH	-0.5	-1.07	
28	6252	201,600	24.6	50	136	5190	*	-12.7	-24.04	
28A	6328				135	5290	*	13.2	30.18	

CON

A

OFF

08
S149A

ANGLE
ATTACHMENT
HANK ANGLE
D-DES.

PETAL DOOR ACTUATOR

LOADS
+ COMPRESSION

R.H. DOOR

L.H. DOOR

ER 5473

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DATE 8-16-65

DATE 8-16-65

DATE 8-16-65

ANGLE	ATTACHMENT	HANK ANGLE	D-DES.	LOADS	COMPRESSION	LOADS	COMPRESSION	LOADS	COMPRESSION
4.1	1.84	2990	-840	-1730	-700	-2190	-1430	38	
4.6	-0.82	-790	-2150	-1630	3110	1430	2150		
0.4	1.22	370	-1890	-740	-60	-1390	-720		
1.4	-0.41	4720	2420	3360	-2230	-4290	-3390		
0.6	0.41	-2470	-5250	-3730	4860	2760	3910		
5.8	-0.82	890	-320	340	860	-440	290		
4.5	2.04	8030	1000	1810	-970	-2800	-1850		
5.4	0.82	-1470	-3040	-2150	2880	1510	2100		
7.0	-0.20	1520	-50	660	1890	210	1050		
6.1	2.04	1730	-520	290	-20	-1430	-690		
6.9	0.20	-320	-1680	-1100	2000	-60	740		
1.1	0.61	580	-840	80	670	-1050	-380		
5.1	0.61	1680	-100	580	1770	-480	570		
3.5	1.43	1210	-790	130	1050	-860	0		
4.1	-1.84	2620	260	1360	-820	-2730	-1960		
4.1	-1.43	3360	840	1940	-1660	-3680	-2760		
3.5	1.02	-1100	-3200	-2150	2570	550	1660		
3.7	0.41	-920	-3360	-2260	2420	400	1470		
4.2	-0.20	2780	680	1730	-1160	-3600	-2310		
2.8	0	1100	-1310	-420	900	-1770	-780		
-1.2	-0.61	-370	-3260	-1780	-400	-2570	-1720		
-0.8	-2.25	4720	1630	3040	-4820	-6690	-5930		
-1.0	-1.02	-4200	-7040	-5640	4360	1734	3140		
-1.4	-0.61	-2470	-5510	-3990	-2040	5550	-3790		
0.5	0.41	4620	1650	3202	①	①	①		
0.5	-1.22	①	①	①	3790	1510	2610		
4.1	-0.20	5300	3040	3940	5890	4060	4670	65	
4.4	-1.02	3930	4940	5670	6380	3990	5240		
4.2	-0.20	NA	NA	NA	NA	NA	NA		
NA	NA								
-2.5	1.43	1520	-1310	290	1870	-1220	40		
-2.3	0.41	6640	1522	4360	1220	-1660	40		
-1.8	-0.20	1020	-1760	160	5570	2100	4630		
1.2	0.20	2550	420	1340	2670	460	1240		
4.3	0.82	5800	2990	4170	5220	3980	4690		
5.2	-0.20	5090	3730	4440	4880	3660	4310		

NOTES

1. * ~ BOOST CUT-OFF
2. RAMP SIDE PANELS ~ OFF
3. NO STRAKE
4. ① R.H. DOOR < 7035
5. ① L.H. DOOR < 6690

FIGURE E-3B

6009
ADS 151A

Run Name	Time	Altitude	Pressure	Temperature	Humidity	Wind	Clouds	Visibility	Remarks
1A	1023	216,600	24.2	0	142	4945	HIGH	0.6	0.54 NA
1B	1069				141	4935		-5.8	-8.09
1C	1096				138	4785	*	16.0	-30.22
1D	1157				141	4640		4.8	7.55
1E	1190				141	5045	*	14.6	3049
2A	1384			20	140	5040		0.2	0
3A	1481			50	140	4940		0.1	0.54
3B	1519				140	4900	*	-14.2	-30.76
3C	1569				142	5120	*	13.5	29.95
4A	1657	214,000	24.5	88	140	5450		0.3	0.7
4B	1708				142	5450		-6.7	-11.87
4C	1742				141	5345	*	-12.0	-29.68
4D	1782				138	5200		4.9	10.25
4E	1822				140	4935	*	11.6	28.87
5A	2002				112	5015		-0.4	0.81
5B	2105				113	4960		-5.1	-11.33
5C	2131				114	4850	*	-12.0	-32.38
5D	2179				113	4705		5.1	10.25
5E	2210				112	4540	*	NA	NA
6A	2628	209,600	24.2	0	165	4925		0.6	108
6B	2668				163	4965		-9.2	-14.30
6C	2716				160	5010	*	13.3	28.06
6D	2771				163	5025	*	-14.2	-26.44
7A	2854			88	160	5105		0.3	108
7B	2890				163	5200	*	-11.6	-25.63
7C	2930				159	5120	*	10.6	26.44
8A	3041	207,600	24.3	0	178	5105	LOW	0.5	135
8B	3077				180	5000		-5.1	-7.55
8C	3115				180	5190		5.2	9.44
9A	3268				201	5370		0.2	108
9B	3293				200	5300		-5.1	-8.09
9C	3315				198	5225	*	-7.0	-10.52
9D	3384				200	5020		4.7	8.09
9E	3405				200	4950	*	5.4	9.71
10A	3645			50	201	5360		0.2	0.81
11A	3789	201,600	24.7	88	200	5295		0.1	108
11B	3815				201	5310	*	-5.3	-11.22

DOWN ACTUATOR

LOADS - LB

* DISCOMPRESSION

Rail 10 R

LP 10 R

ER 5473

MODEL C-141A

W. E. I. A. 6

E-15-1-167

DATE 6-17-65

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A	9.2	1.65	3050	1610	2340	3010	1750	2340	55
	8.7	-0.83	2860	1390	2130	3490	150	2340	
	8.4	-2.07	1940	300	790	5570	3580	4570	
	9.4	-1.24	3490	2130	2890	3340	1960	2650	
	9.5	-0.69	5550	3490	4250	1870	300	1070	
	8.1	0.41	2670	1580	2130	2820	1560	2100	
	4.6	0.41	2560	1200	1610	2630	1370	1810	
	4.0	-0.41	4090	2940	3110	4120	2480	3300	
	4.2	-1.10	4420	2450	3270	4500	3130	3720	
	0.6	-4.27	1360	-490	410	1980	-190	800	
	10	-3.17	3820	1280	3160	1100	-1180	-190	
	17	-1.65	7940	5400	6490	4120	760	2210	
	0.7	-4.00	650	-1040	-60	3430	1850	2570	
	0.8	-4.69	4530	2440	3990	8420	6100	7200	
	6.1	-1.38	1580	160	950	1720	530	1180	
	5.9	-2.07	2040	760	1420	1100	-500	440	
	4.8	-4.41	3270	2130	2590	1600	40	820	
	5.9	-1.79	1140	2450	360	2250	990	1600	
	NA	NA	760	270	840	3200	1940	2480	
	6.7	0.41	3190	1440	2290	3450	1560	2440	
	6.6	0.83	3710	2130	2890	4520	2380	3390	
	6.9	-3.17	5340	3240	4090	2840	1370	2020	
	5.6	-0.55	6160	1640	2320	5120	3530	4730	
	-2.3	0	1440	-870	-60	1870	-550	290	
	-0.8	0.97	10440	7170	9190	4380	1470	3070	
	-2.6	-3.03	5180	2130	3270	8320	7660	8540**	
	4.2	0.55	4850	2400	3520	4990	2480	3680	
	4.8	2.48	6160	3410	4610	5110	3200	4230	
	4.5	-1.10	5730	3140	4250	6100	3700	4760	
	3.1	-2.62	5340	2640	4090	5760	2860	4350	
	3.4	-1.10	7120	3930	5450	5850	3070	4380	
	3.6	-1.10	7500	4360	6080	5970	3490	4880	
	3.1	-5.10	5940	2860	4472	6610	4100	5320	
	3.1	-1.24	5970	3330	4720	6670	4120	5510	
	-2.5	1.10	3930	540	1530	3580	570	2080	
	-3.3	-3.31	-270	-3000	-1500	630	-1850	-860	
	-3.0	3.72	5070	1720	3540	-300	-3640	-2230	

NOTES

1. AM BOOST CUT-OFF
2. RAMP SIDE PANELS ON
3. NO STRIKE
4. ** ~ L.H. GALVONOMETER BECAME NON-LINEAR AT APPROXIMATELY 8300 #C.

FIGURE E-4A

6008
ADS 151B

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.G. % N.A.C.	FLAP POS. SP-1/2	AIR SPEED KTS	ALTITUDE FT.	WIND DIRECTION	WIND SPEED	WIND CORR.	WIND CORR.	WIND CORR.
11C	3855	200600	24.2	88	200	5370	HIGH	3.6	9.44	NA	
12A	4728			0	134	5105	LOW	-2.1	-1.35		
12B	4772				133	5040		-3.1	-6.75		
12C	4808				135	4790		*-15.7	-30.76		
12D	4851				133	4580		4.9	7.01		
12E	4888				133	4320		*1.49	32.11		
13A	5090			20	134	5005		-0.6	-0.54		
14A	5138			50	133	5460		-0.3	-0.54		
14B	5183				133	5120		*-15.1	-30.49		
14C	5236				134	5285		*13.3	31.03		
15A	5324	195600	24.3	88	134	5245		-0.6	-0.27		
15B	5361				134	5170		-5.7	-8.09		
15C	5832				134	5760		*-13.1	-31.84		
15D	5875				133	5580		5.2	8.36		
15E	5905				134	5000		*NA	NA		
16A	5963				12V6						
16B	5996										
16C	6024							*			
16D	6062										
16E	6089							*			
17A	6384	192,800	23.5	0	158	5040		0.8	0.81		
17B	6422				163	4955		*-14.8	-27.52		
17C	6473				160	5910		*13.7	27.52		
18A	6611			88	160	5480		0.5	0.81		
18B	6639				162	5490		*NA	NA		
18C	6759				161	5640		*-12.2	-26.7		
18D	6818				160	5670		*11.7	26.17		
19A	6899	190,100	23.3	0	181	5205	HIGH	0.6	0.81		
19B	6943				180	5250		-5.8	-7.82		
19C	6972				181	5260		4.6	5.94		
20A	7129				200	5390		0.4	0.27		
20B	7164				200	5260		-5.3	-7.32		
20C	7193				200	5340		*-6.8	-3.58		
20D	7233				201	5100		5.2	7.82		
20E	7250				199	5020		*4.9	7.55		
21A	7453			50	200	5485		0.3	0		
22A	7513	185,600	23.2	55	199	5290		0.5	0.27		

PITCH ANGLE
STRESS
ANGLE OF
ATTACK
RAMP ANGLE
2 DEGS.

PETAL DOOR ACTUATOR LOADS - LBS + COMPRESSION R.H. DOOR L.H. DOOR

PETAL DOOR
POSITION - DEGS.

ER 5473
MODEL C-141A
AFG 9-11 AC 600
10-167
DATE 8-17-65

Page E-14

NA	PITCH ANGLE	STRESS	ANGLE OF ATTACK	RAMP ANGLE	2 DEGS.	MAX	MIN	MEAN	MIN	MAX	MEAN	55	NOTES
NA	-2.0	-4.83	-140	-3680	-1910	4940	1680	3010	55				
	9.2	-0.83	3350	1720	2450	3200	2100	2710	55				1. * ~ BOOST CUT-OFF
	9.8	0.28	3220	1690	2510	3470	2250	2780					2. RAMP SIDE PANELS ~ ON
	8.8	3.72	1690	80	820	5180	3470	4480					3. No STRAKE
	10.0	-2.48	4040	2180	2940	3770	1940	2740					4. RAMP SIDE PANELS ON
	10.5	0.14	4850	3270	4310	1450	80	740					FOR RUN LIC
	8.5	0	3990	1690	2430	3280	2100	2480					5. * ~ L.H. GALVONOMETRI
	4.2	-0.69	2920	1090	1940	2630	1370	1920					BECAME NON-LINEAR AT
	2.7	-4.14	4360	2780	3650	3390	2020	2630					APPROXIMATELY 8300 * C
	4.4	-4.96	3990	2100	2780	4380	3130	3660					
	0.7	-4.14	1640	-140	630	1330	-800	500					
	1.0	-6.34	3080	1310	2130	250	-1370	-530					
	1.6	-1.10	6050	3900	5130	2100	170	1140					
	0.7	-0.97	220	-1830	-930	2860	1180	2020					
	NA	NA	6000	1360	2400	6290	4540	5490					
			1990	490	1200	2290	1100	1680					
			NA	NA	NA	NA	NA	NA					
	6.5	-2.07	3710	2130	2890	3660	2290	2950					
	5.1	-1.10	3110	1170	2150	5620	3770	4840					
	6.7	-3.17	5620	3990	4420	3160	1330	2270					
	-2.5	-3.59	1120	-1580	-570	1640	-760	400					
	NA	NA	NA	NA	NA	NA	NA	NA					
	-0.6	1.93	9220	6490	8150	3670	1440	2630					
	-1.9	-2.07	4610	2130	3270	9450	7910	3840**					
	4.6	-0.97	5320	3270	4310	5340	2390	4200					FIGURE E-4
	4.5	-2.21	6520	3960	5290	5490	3240	4500					
	4.7	-4.00	5890	3220	4580	6290	4270	5200					
	3.1	-1.10	5840	3220	4310	5970	3050	4730					
	3.4	-2.48	7420	4550	6080	6020	3510	4500					
	3.6	1.10	7990	5130	6540	7700	3390	4920					
	3.0	-3.17	6240	3410	4610	7780	4560	6060					
	3.2	-1.52	6220	3990	4850	7780	4820	6160					
	-1.6	0.28	2290	-60	1040	3560	720	1680					
	-2.0	-0.25	-790	-4090	-2560	170	-2230	-900					

25

Q-3

METER

AT

37

4-B.

008
DS 151B

7151 5003

[illegible]

141A
65

6008
ADS-159

RUN NUMBER	TIME CORR.	GROSS WEIGHT LBS	C.S. % N.A.C.	FLAP POS. % N.A.C.	AIRFIELD KNOTS	ALTITUDE FT.	WIND KNOTS	WIND DIR.	WIND PRESS.	WIND PRESS.	WIND PRESS.	WIND PRESS.
1A	985	16800	30.9	0	139	5590	HIGH	-0.4	0.8	*		
B	1027				140	5570		-5.4	-6.3			
C	1065				141	5520	*	-15.4	-28.9			
D	1207				143	5400		5.2	8.0			
E	1248				138	5300	*	14.4	31.9			
2A	1481			20	140	5670		-0.3	0			
3A	1653			50	143	5960		-0.1	-1.1			
B	1704				132	6010	*	-13.0	-31.6			
C	1764				110	6220	*	12.2	31.9			
4A	1956			88	142	6350		-0.4	-0.3			
B	1989				137	6420		-5.2	9.4			
C	1922				139	6480	*	-13.6	30.8			
D	1999				140	6660		5.4	10.4			
E	2019				141	6800	*	12.5	28.9			
F	2307				111	6030		-1.2	0.6			
B	2368				118	6200		-5.0	-6.6			
C	2406				109	6390	*	-3.4	-32.5			
D	2453				114	6450		4.9	9.6			
E	2493				113	6500	*	11.7	32.7			
6A	2738			0	160	6160		-0.2	-0.3			
B	2781				161	5940	*	-14.5	-26.7			
C	2894				160	6800	*	13.7	28.1			
7A	3009			88	162	6830		-0.5	-0.3			
B	3074				160	7200	*	-12.4	-26.7			
C	3127				160	7460	*	10.6	25.0			
8A	3151	10700	30.2	0	183	7010	LOW	-0.4	0			
9A	3174			20	182	7200		-0.5	0			
10A	3409	10300	30.1	0	180	7580		-0.1	-0.5			
B	3518				202	7620		-5.2	-6.3			
C	3552				200	7680	*	-6.4	-10.2			
D	3636				203	7780		4.9	9.5			
E	3662				200	7650	*	5.3	9.3			
11A	3834	15400	30.0		151	8730	HIGH	-0.2	-0.5			

5~OFF

E-4C

6008
ADS 151C

Page E-16

4.2 COMPRESSION

L.H. DOOR

PETAL DEGR
POSITION - DEG

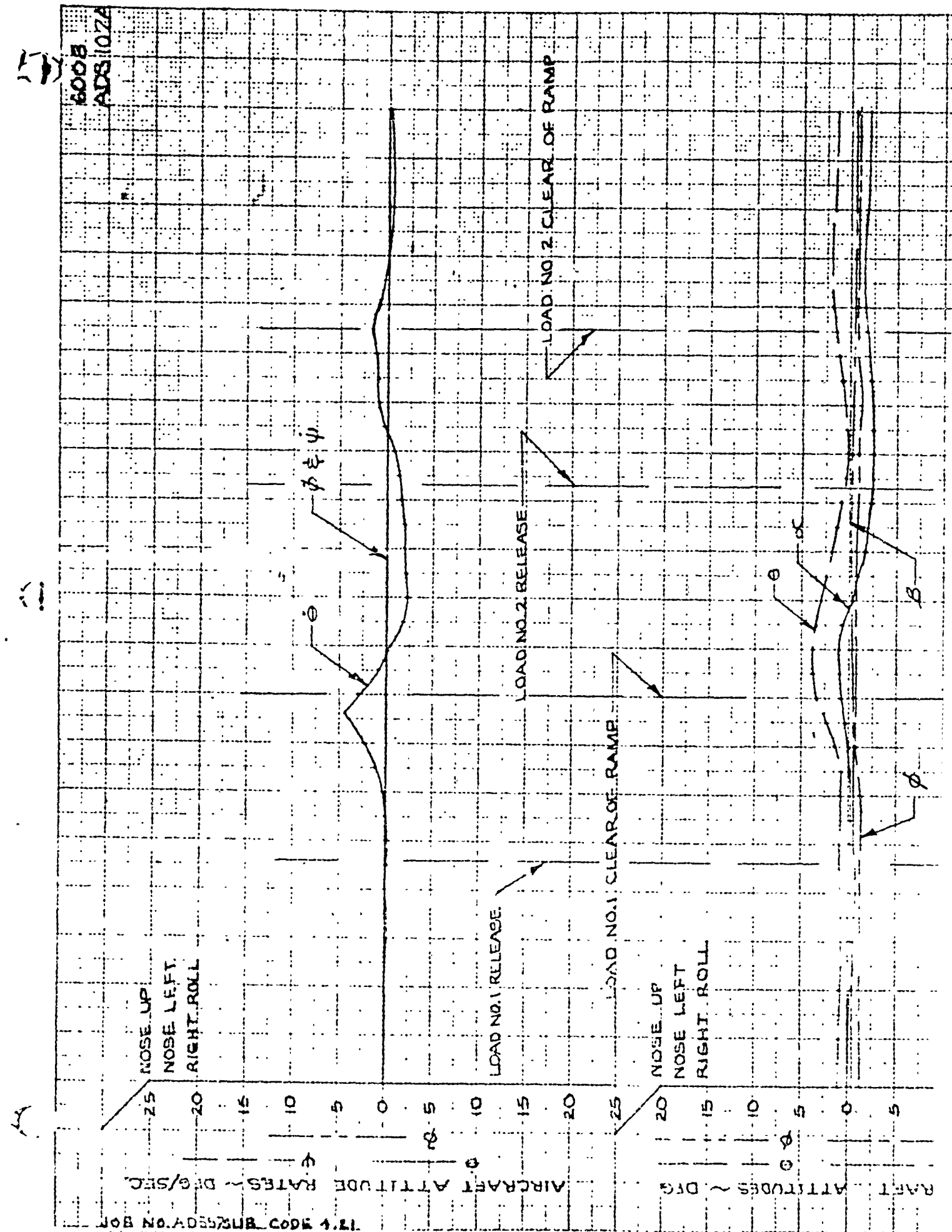
FIGURE E4.

LOCKHEED - GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA

REPORT NO. ER 5475
MODEL C-141A
PAGE E-1

APPENDIX F

57



PREPARED BY FCW

DATE 6-25-65

CHECKED BY JMW

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE F-2

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077 LAC 6008

TEST DATE 6-24-65

FLIGHT 145 DROP NO. 27

SHEET 7 OF 7

CARGO WT 34800 LBS-1

9450 LBS-2

FLY CONDITIONS: DROP 1 - DROP 7

1. G.W. ~ 201000 LBS ~ 166,200 LBS
2. C.G. PRIOR TO DROP ~ 33.6 & 27.8% MAC
3. C.G. AFTER DROP ~ 27.8 & 30.5% MAC
4. FLAPS ~ 0.5%
5. GEAR ~ UP
6. AVG. EPR ~ 1.31 (4 ENGINES)
7. AH ~ 0.8 DEG. (A/C NO.)

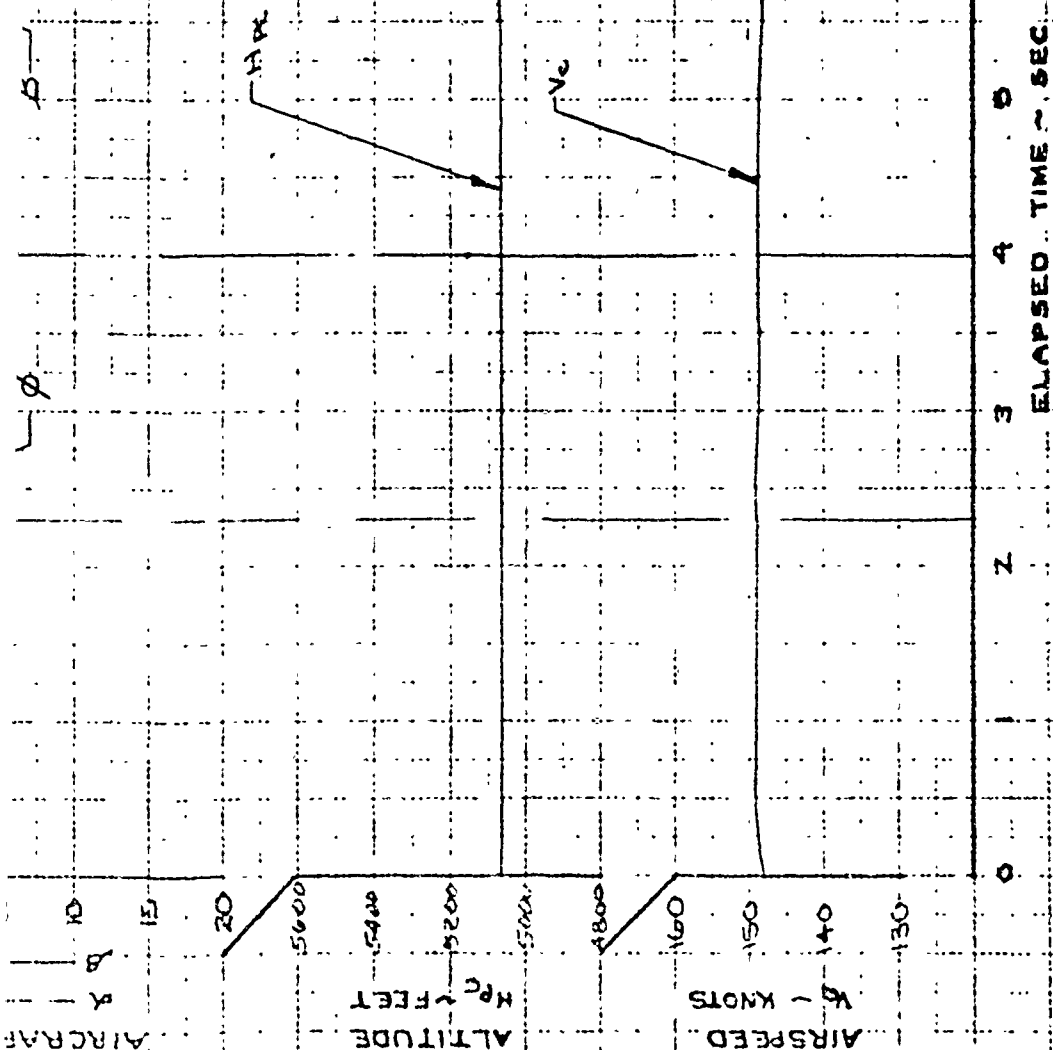
CARGO DESCRIPTION

1. TYPE CARRIER + PLATFORMS
2. LENGTH ~ 288 IN & 96 IN
3. CARGO C.G. POSITIONS
LONG. ~ FS 1022 & FS 813
VERT. ~ WL 183 & WL 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2 & 1
2. CHUTE SIZE ~ 28 & 22
3. RATED CHUTE FORCE/CARGO WT. ~ 133
4. EXTRACTION LINE LENGTH ~ 100 FT & 140 FT

FIGURE F-A



6008

ADS 02A

REVISED 12-15-65
MBH

6008
ADS02B

RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

50

60

70

CONTROL FORCES ~ LBS

NO. 1 NO. 2 NO. 3

NO. 1 CLEAR OF RAMP

NO. 1 LOAD RELEASE

NO. 3 LOAD RELEASE

NO. 2 CLEAR OF RAMP

Fa

Fa

Fa

T.E. UP

20

15

10

5

0

IRON POSITION ~ DEG

Fa



PREPARED BY FCW
DATE 6-24-65
ENTERED BY JMD

REPORT NO ER 5473
MODEL C-141A
PAGE F-3

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 6-24-65

FLIGHT 145

DROP NO 37

SHEET 2 OF 7

CARGO WT. 34800 LBS - 1
9450 LBS - 2

NOTE:
SEE FIGURE 1 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

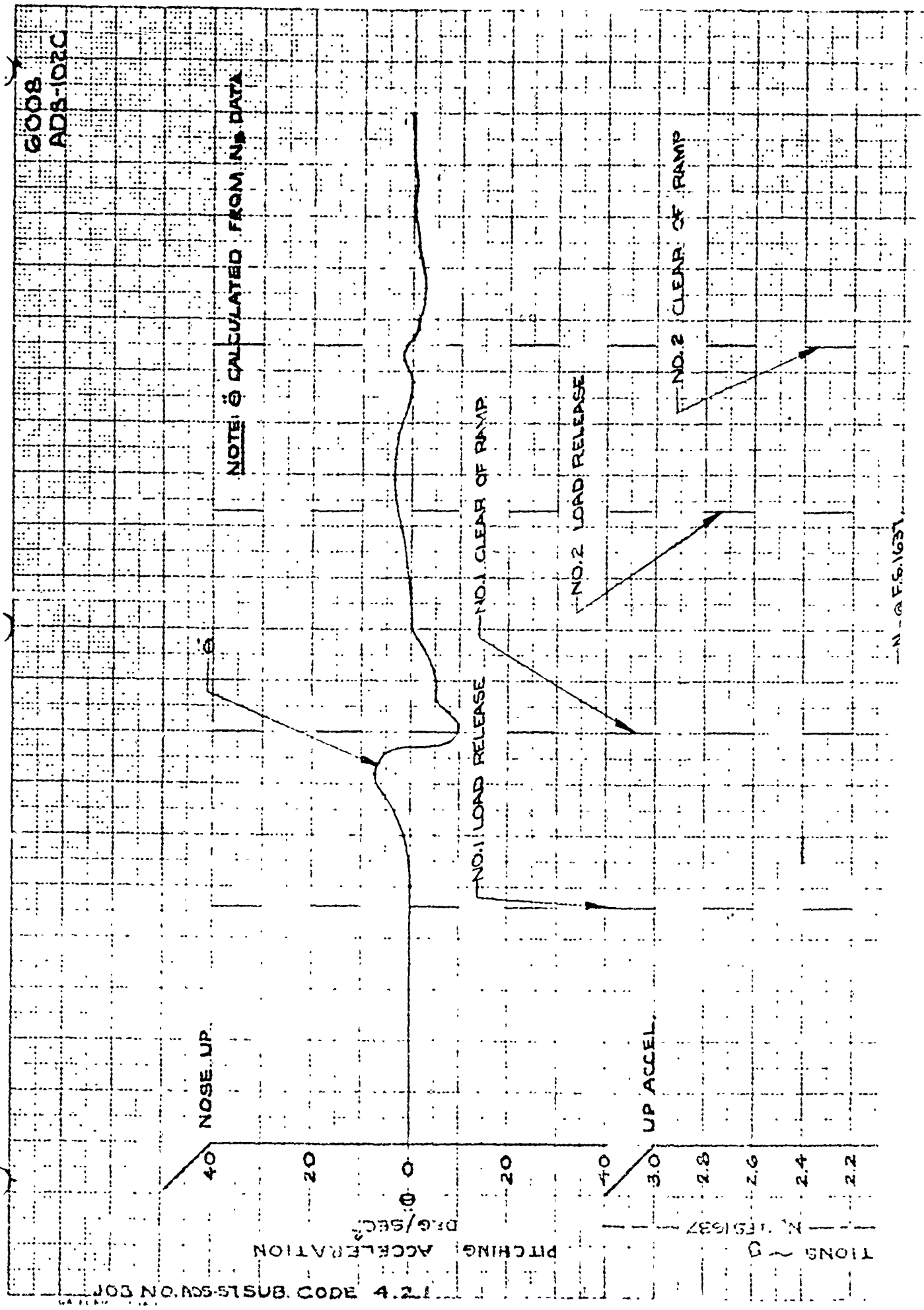
T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONING
DEGREES

LEFT AILERON

FIGURE 1-13

6008
ADS 102E



PREPARED BY T.E.D.
 DATE 6-24-69
 CHECKED BY JMD

LOCATED AT
 ATTACHED TO

REPORT ER 5473
 MODEL C-141A
 P-4

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
 AF 63-8077 LAC 6008
 TEST DATE 6-24-69
 FLIGHT ~ 145 DROP NO ~ 31

SHEET 3 OF 1

CARGO WT. 34,800 LBS - 1
 9450 LBS - 2

NOTE:
 SEE FIGURE 178 SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTIO
 CHUTE DESCRIPTION.

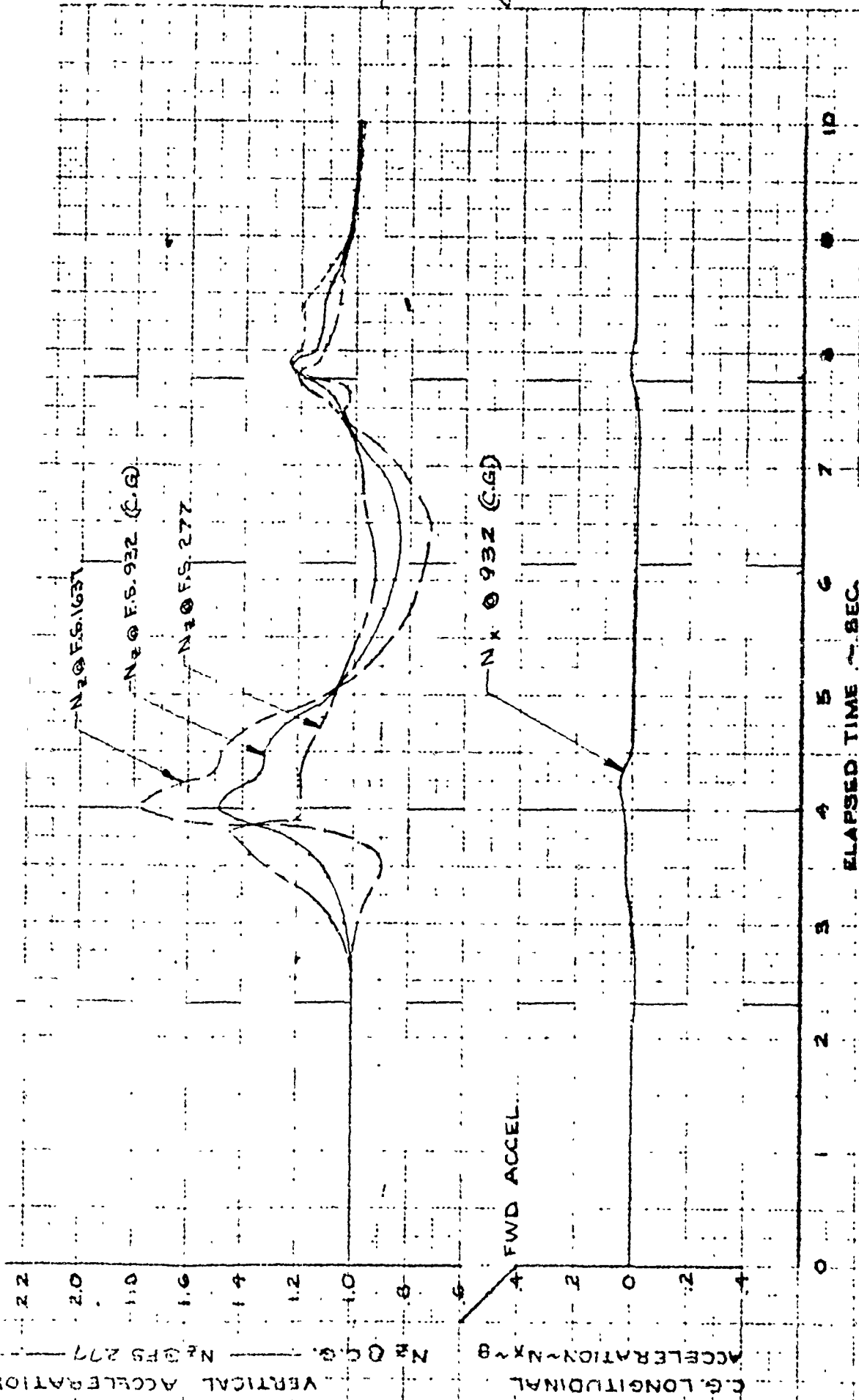


FIGURE F1-C

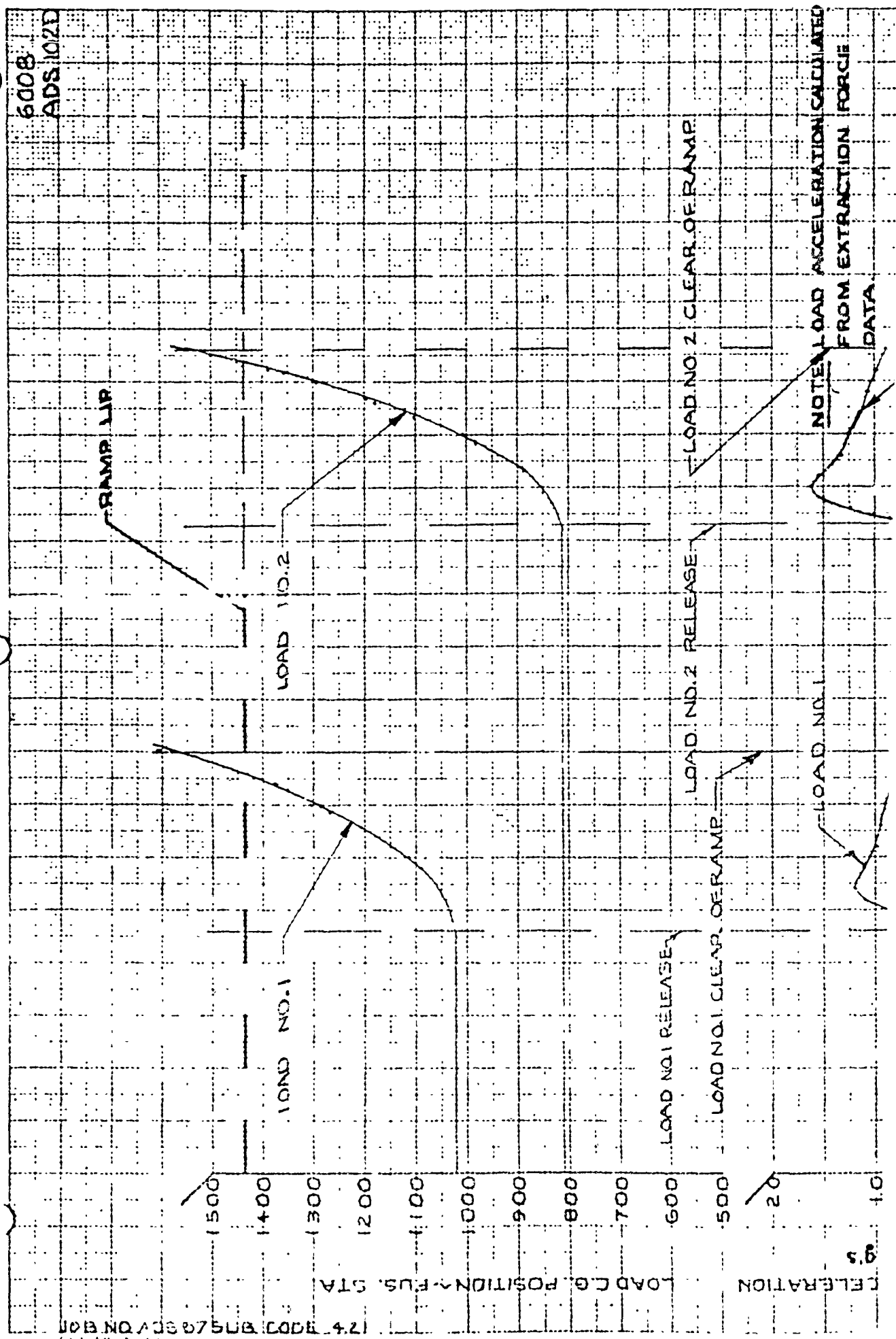
6008
 ADS-102

B
102C

Q
TION

1
2

K



PREPARED BY FCW
DATE 6-24-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE F-5

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63-8077

LAC 60

TEST DATE 6-24-65

FLIGHT 145

DROP NO. 37

SHEET 4 OF 7

CARGO WT. 34800 LBS. -1
9450 LBS. -2

NOTE:

SEE FIGURE 178, SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

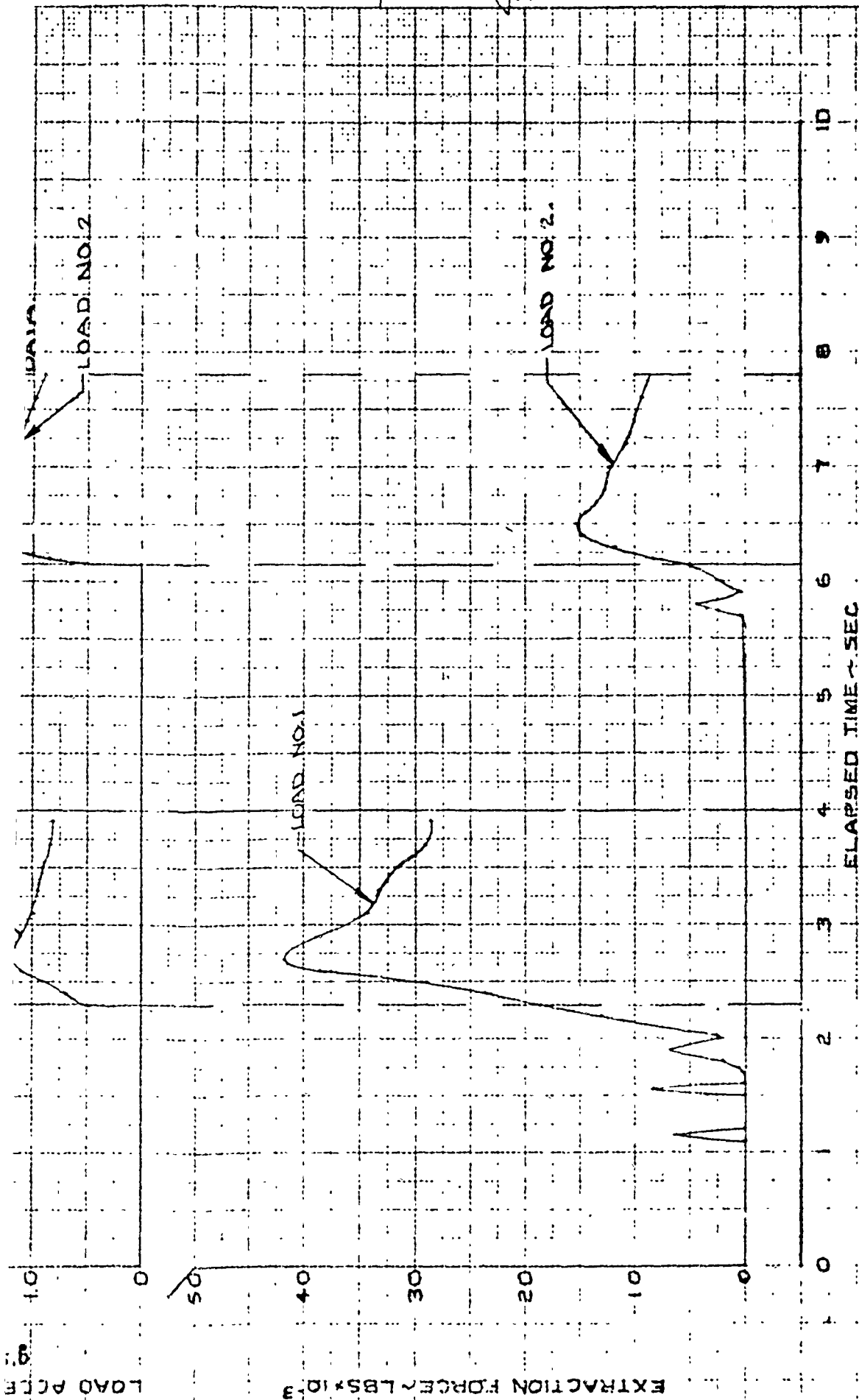
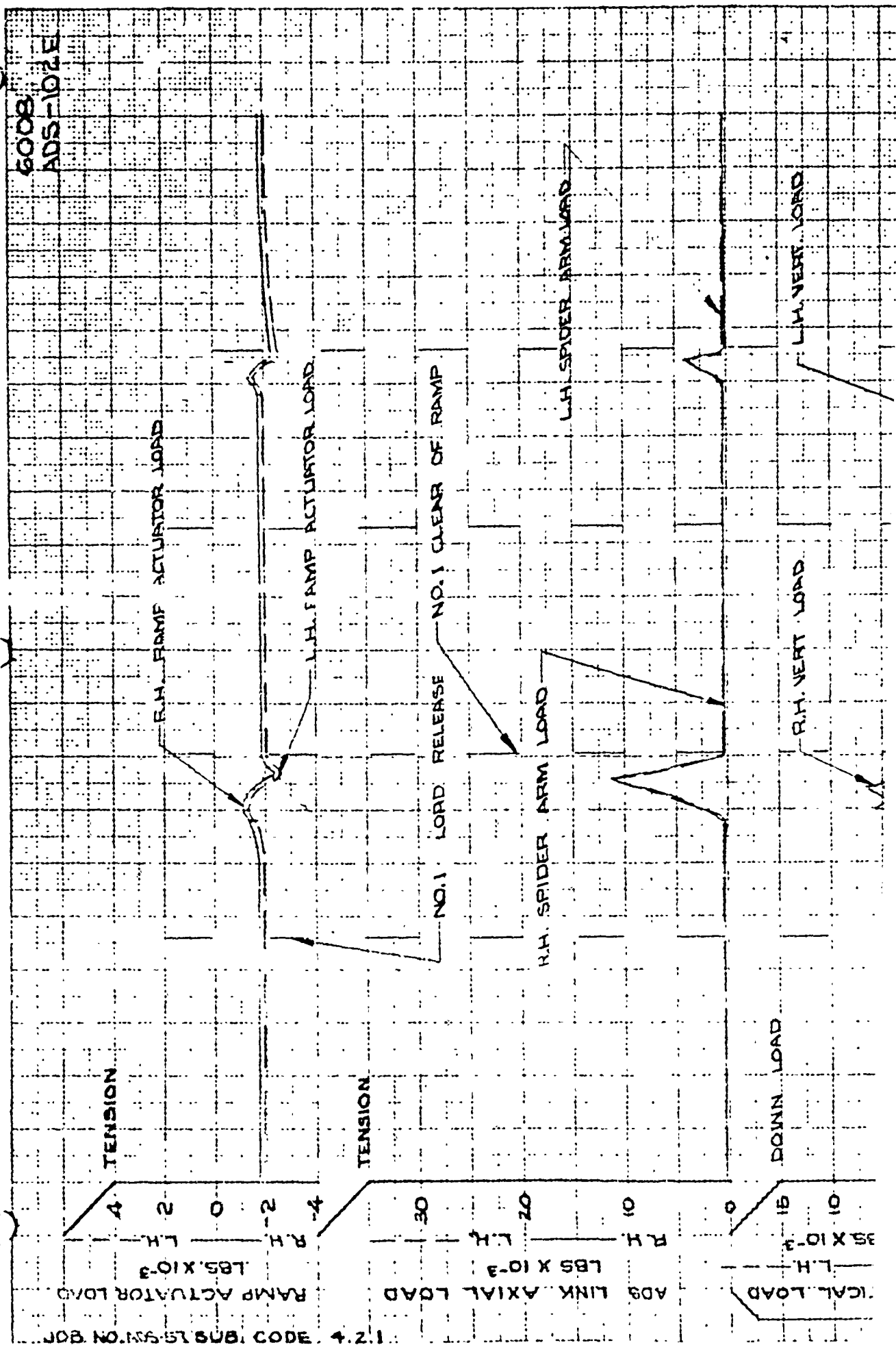


FIGURE F1-D

6008
ADS 10

...JOB NO. 155-57 SUB. CODE 4.2.1



PREPARED BY **TED**
 DATE **6-23-65**
 APPROVED BY **[Signature]**

LOCKHEED CORP. AERONAUTICAL DIVISION
 A DIVISION OF LOCKHEED CORP. 1200 LOCKHEED BLVD. PALMDALE, CALIF. 91326

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **F-6**

TIME HISTORY OF AERIAL DELI MANEUVER

MODEL **C-141A**
 AF 63-8077 LAC 60
 TEST DATE: **6-24-65**
 FLIGHT: **145** DROP NO.

SHEET **5** OF **7**

CARGO WT. **34800 LBS**
9450 LBS

NOTE:
 SEE FIGURE 118, SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

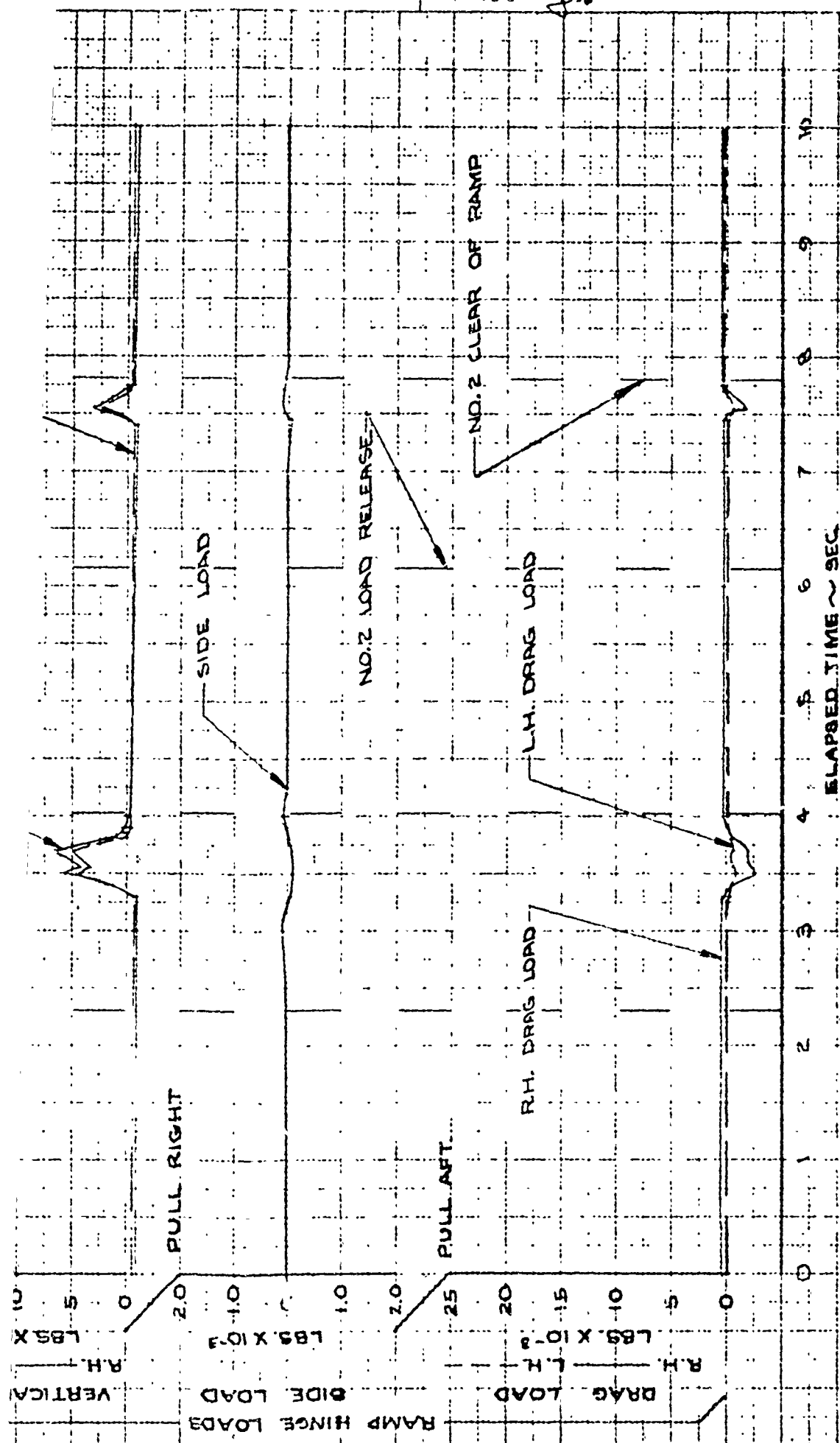


FIGURE F-1

8009
 ADS-

6008
ADS-102F

COMPRESSION

R.H. PETAL DOOR ACT. LOAD

L.H. PETAL DOOR ACT. LOAD

NO.2 LOAD RELEASE

NO.2 CLEAR OF RAMP

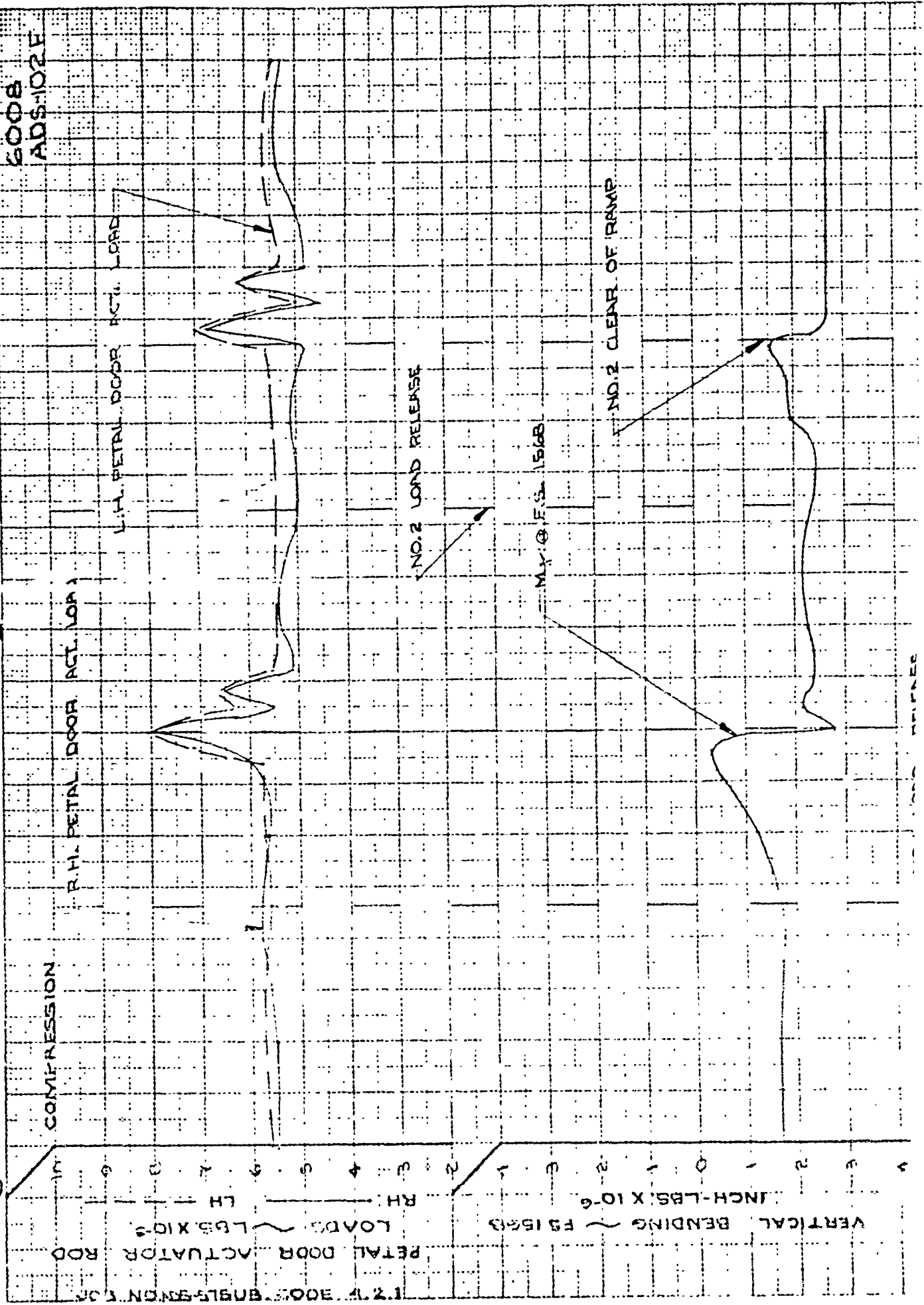
MAX. RES. 1568

PETAL DOOR ACTUATOR ROD

LOADS ~ LBS. X 10³

VERTICAL BENDING ~ F31568

INCH-LBS. X 10⁻⁶



PREPARED BY TED
DATE 6-25-65
CHECKED BY JUP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. FR 5473
MODEL C-141A
PAGE F-7

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AFG3-8077 LAC 6008
TEST DATE 6-24-65
FLIGHT 146 DROP NO 37

SHEET 6 OF 7

CARGO WT. 34 800 LBS - 1
9450 LBS - 2

NOTE:
SEE FIGURE 18 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

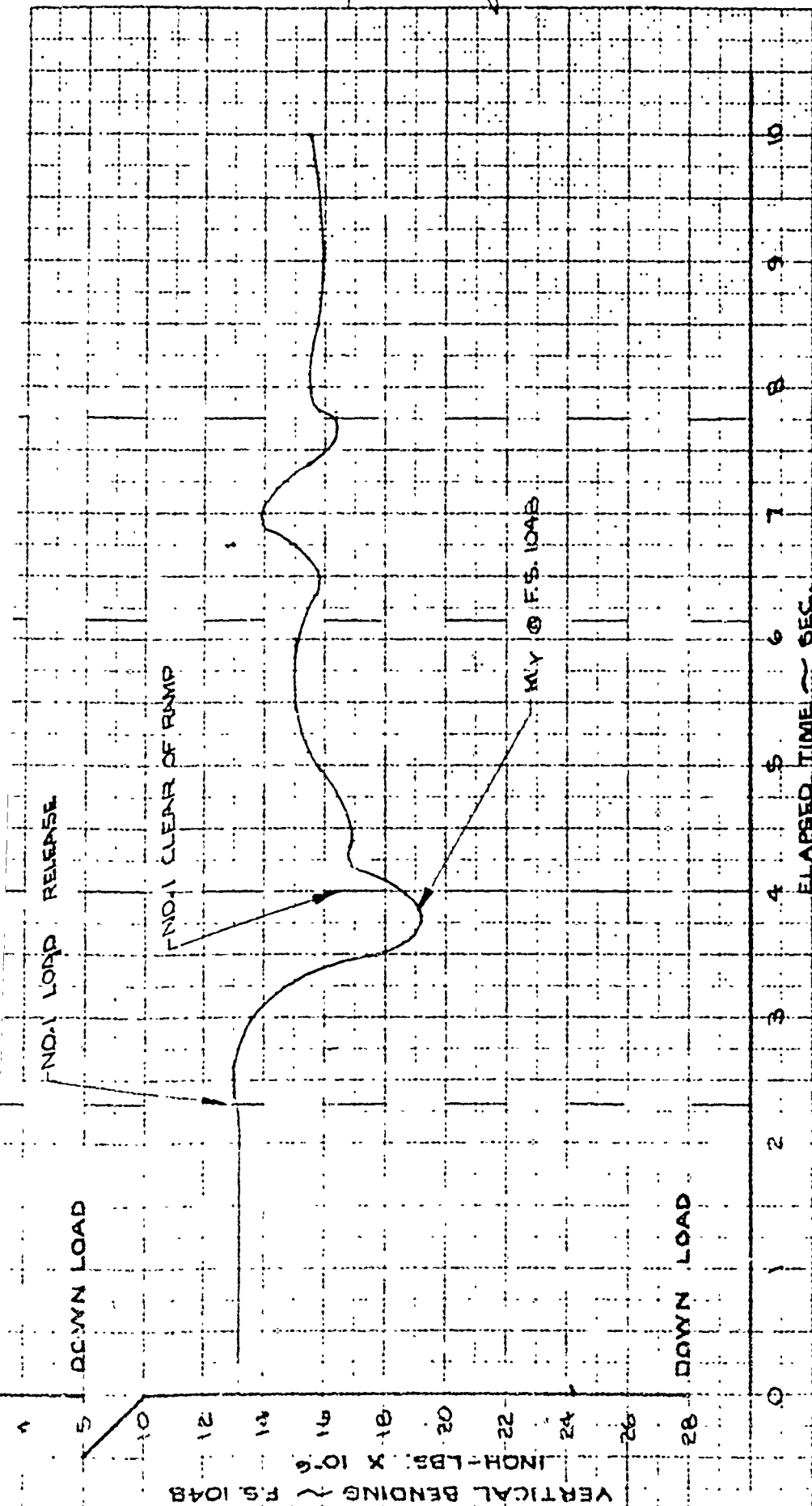
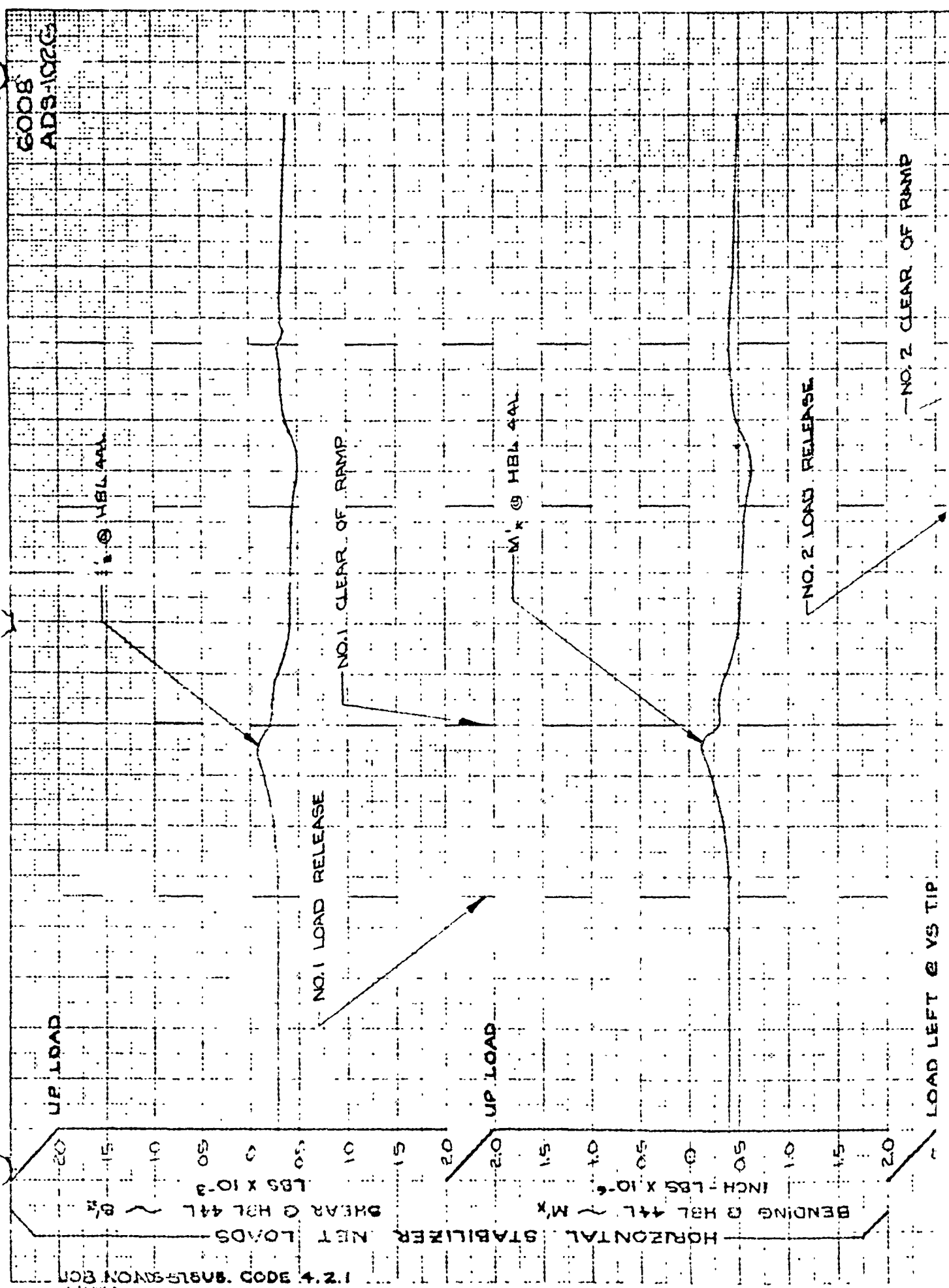


FIGURE F1-F

6008
ADS-102F

32F
B



PREPARED BY **TED**

DATE **6-23-65**

CHECKED BY *[Signature]*

LOCKHEED GELFIA COMPANY
A DIVISION OF LOCKHEED AERONAUTICAL CORPORATION

REPORT NO.

ER 5473

MODEL

C-141A

PAGE

F-8

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-B077

LAC 6008

TEST DATE: 6-24-65

FLIGHT 145

DROP NO. 31

SHEET 1 OF 1

**CARGO WT. 34800 LBS. - 1
9450 LBS. - 2**

NOTE:
SEE FIGURE 18 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

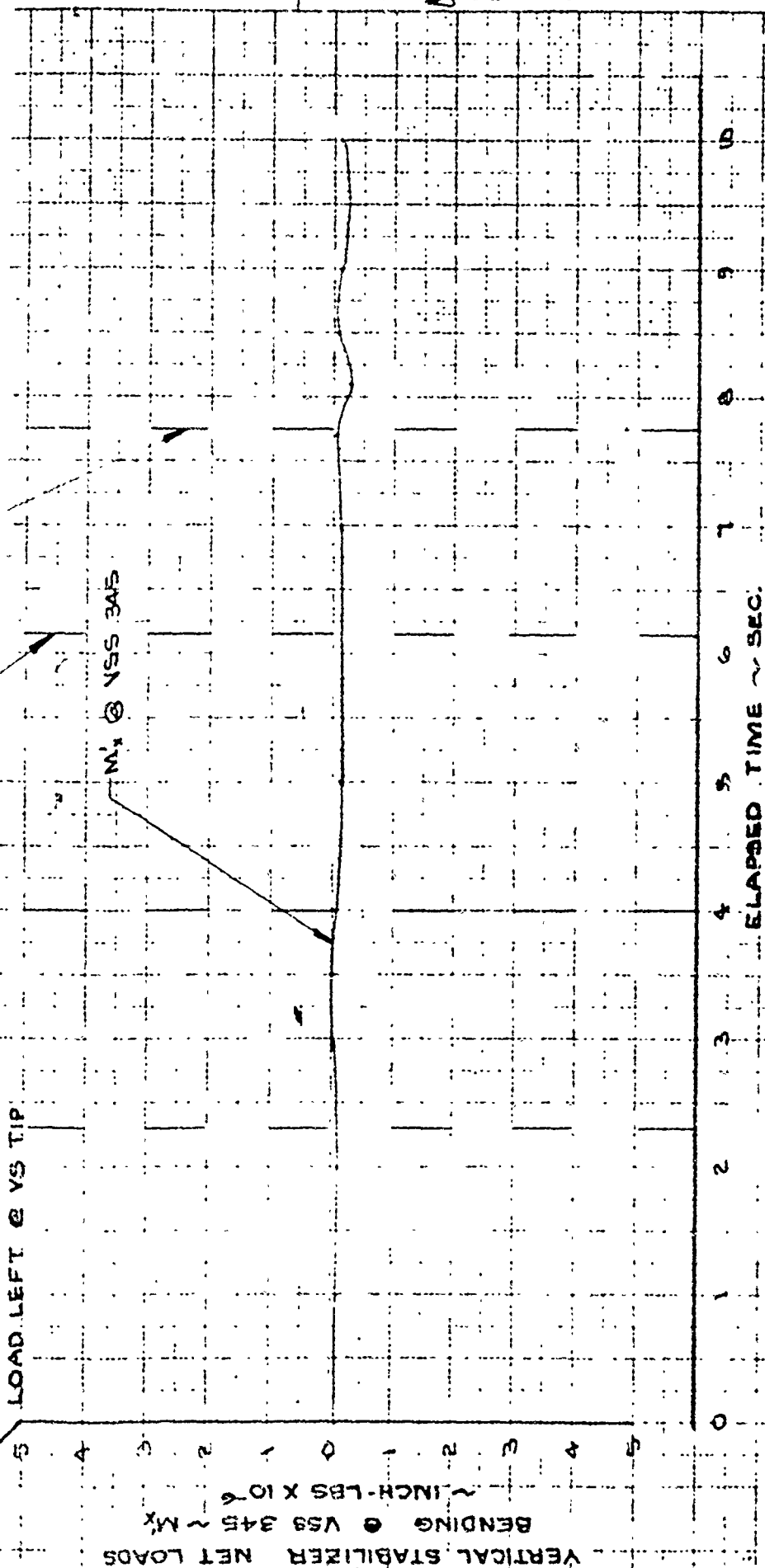
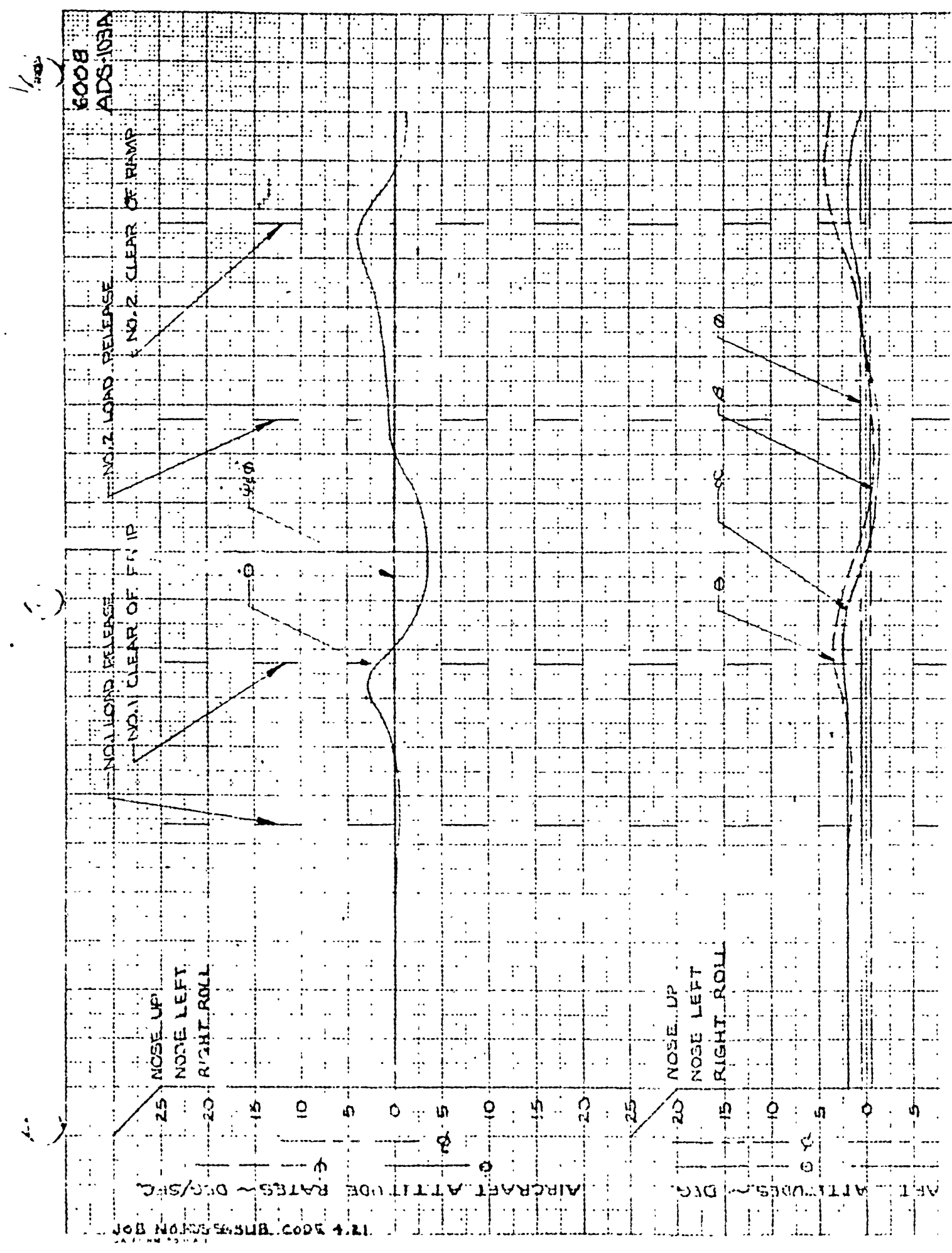


FIGURE F1-G

**6008
ADS-102G**



PREPARED BY **TED**
DATE **6-29-65**
CHECKED BY **JMD**

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO **ER 5473**
MODEL **C-241A**
PAGE **P-9**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF638077

LAC 6008

TEST DATE **6-28-65**

FLIGHT **146**

DROP NO **38**

SHEET **1** OF **3**

CARGO WT **34,900 LBS - 1**
22,450 LBS - 2

RUN CONDITIONS DROP #1 DROP #2

1. G. W. **216,900 LBS - 182,000 LBS**
2. C. G. PRIOR TO DROP **33.5 - 24.7% MAC**
3. C. G. AFTER DROP **24.7 - 30.5% MAC**
4. FLAPS **65 %**
5. GEAR **UP**
6. AVG. EPR **1.28 (AVG 4 ENGINES)**
7. α **~ 0.3 DEG (A/C N/U)**

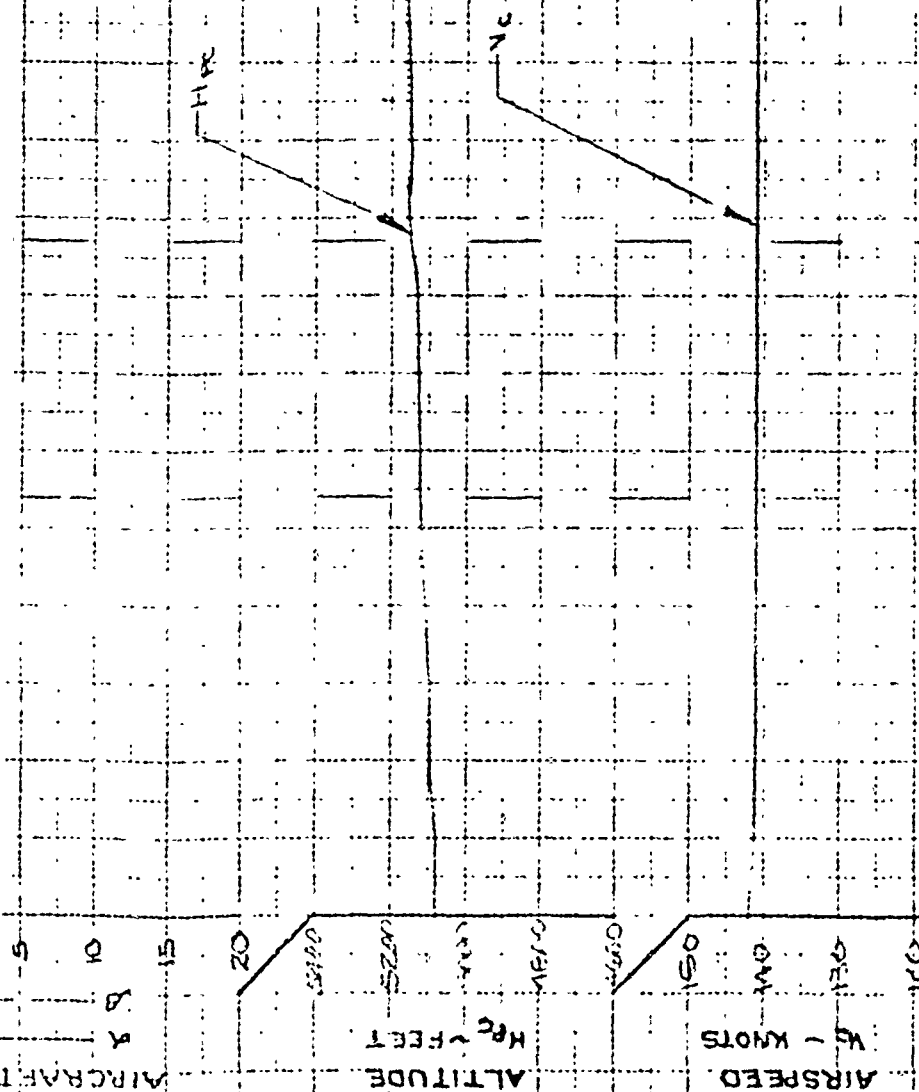
CARGO DESCRIPTION

1. TYPE CARRIER / PLATFORM
2. LENGTH **128.5 IN. 192 IN.**
3. CARGO C.G. POSITIONS
LONG. **~ PS 1074 1816**
VERT. **~ WL 179 179**

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES **2 1**
2. CHUTE SIZE **28 23**
3. RATED CHUTE FORCE/CARGO WT. **17**
4. EXTRACTION LINE LENGTH **100 100**

FIGURE 2-A



6008

ADS-103A

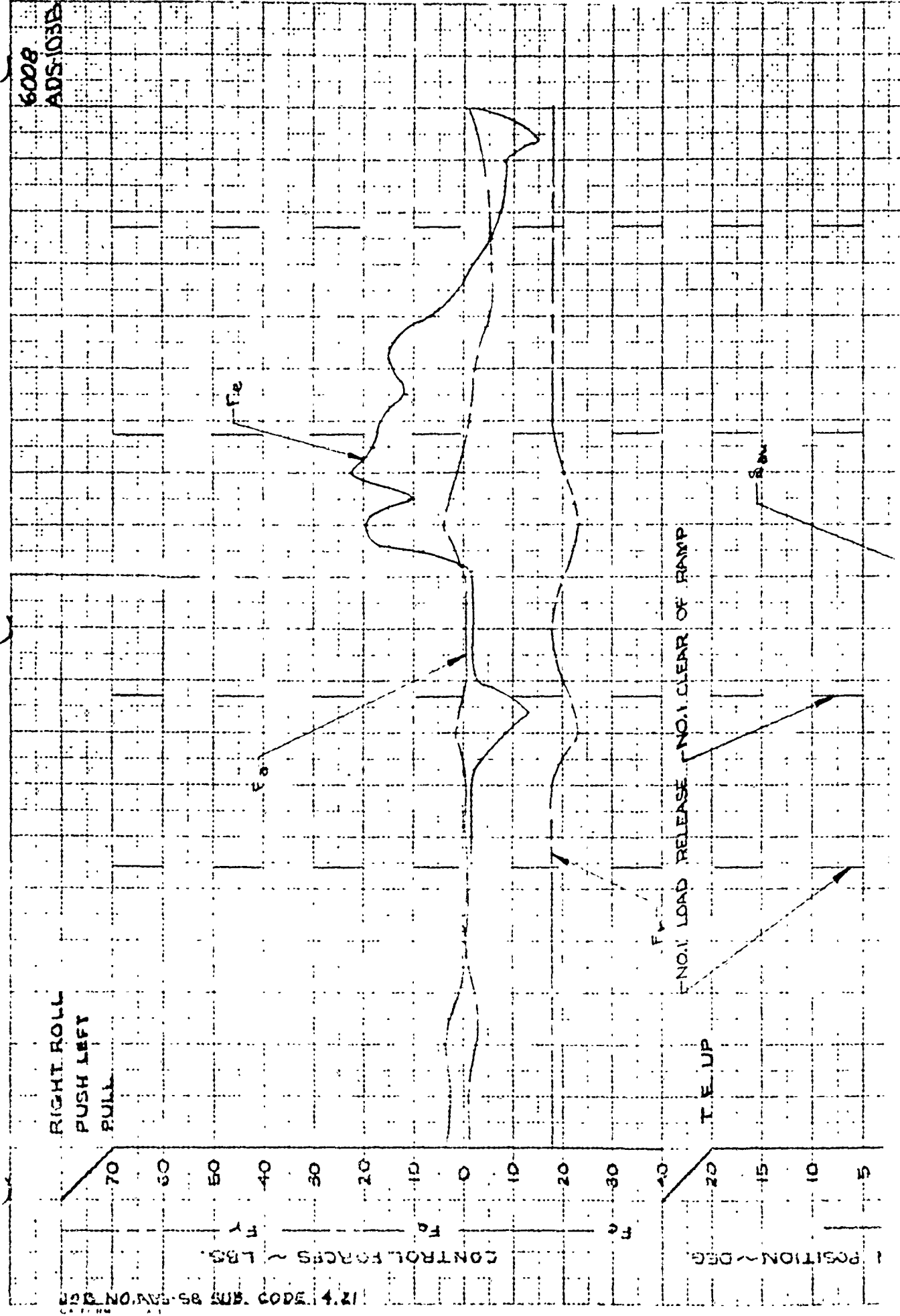
REVISED 12-13-65
MBH

6008
ADS-103B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40
F_y
CONTROL FORCES ~ LBS.
F_a
F_e
POSITION ~ DEG.
T.E. UP
20 15 10 5

124.5003 FMS 95-AVN-000
NO. AVS-58 SUB. CODE 4.21



PREPARED BY TEO
 DATE 6-29-63
 CHK BY JWD

EXPERIMENTAL DATA COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 PAGE F-10

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63 8077

LAC 60

TEST DATE 6-28-63

FLIGHT 146

DROP NO 38

SHEET 2 OF 1

CARGO WT. 34,900 LBS - 1
 22,450 LBS - 2

NOTE:
 SEE FIGURE F-2 SHEET 1 OF 1
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

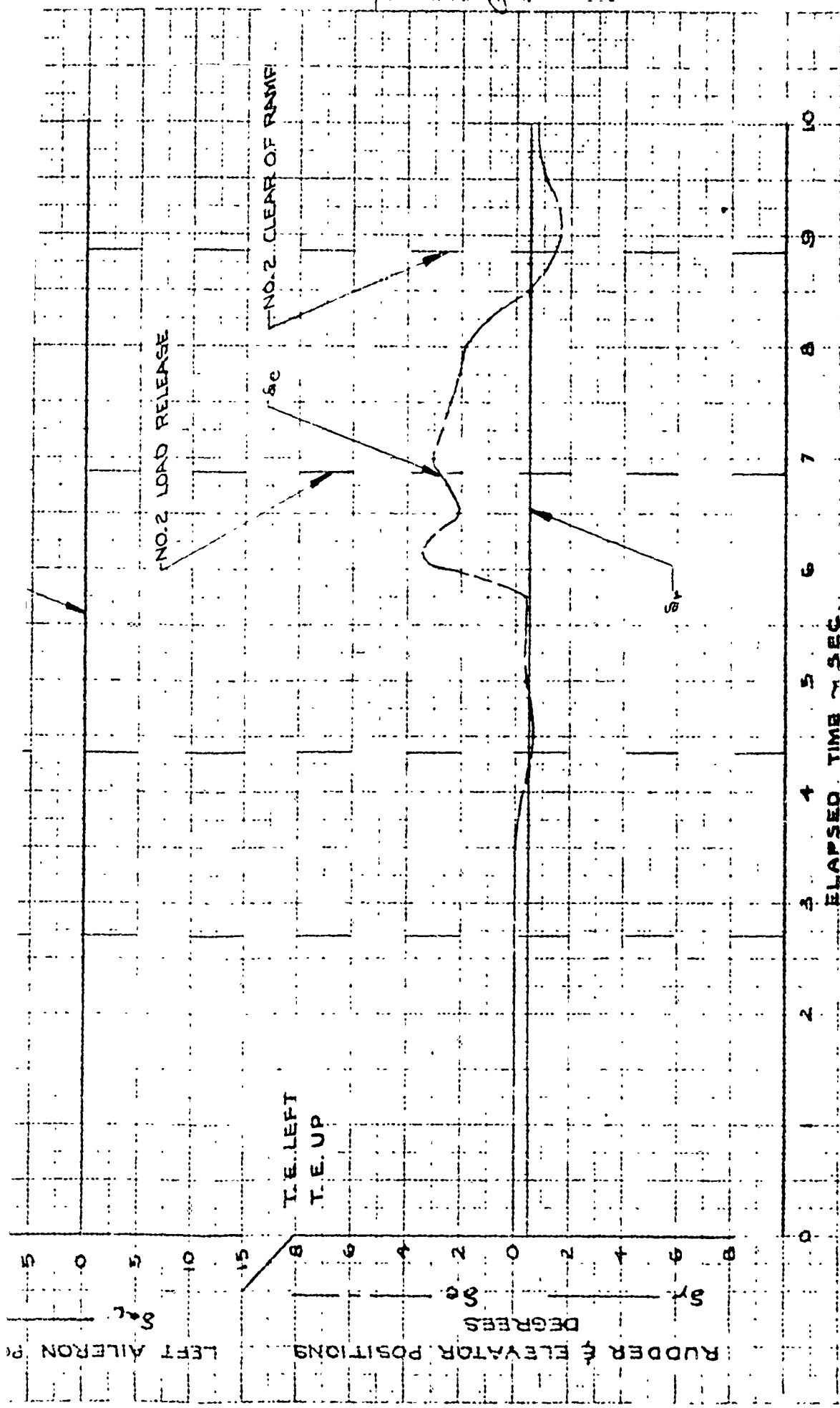


FIGURE F-2.3

600
 ADS

VERY

6008

38

2

ON

6008
ADS-103C

NOTE: θ CALCULATED FROM NA DATA

NO.1 LOAD RELEASE NO.1 LOAD CLEAR OF RAMP

NO.2 LOAD RELEASE NO.2 LOAD CLEAR OF RAMP

N₂ O.F.S. 1631

NOSE UP

UP ACCEL.

PITCHING ACCELERATION DEC/SEC²

IONS ~ 9

JOB NO. ADS-103C SUB. CODE 4.2.1

6008
ADS-103B

PREPARED BY **TED.**
 DATE **6-30-68**
 CHECKED **Jim**

RECEIVED BY **AF 63-8077**
 AIR FORCE MATERIEL COMMAND

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **F-11**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C141A**
 AF 63-8077 LAC 6008
 TEST DATE **6-28-68**
 FLIGHT **146** DROP NO. **38**

SHEET **3** OF **7**

CARGO WT. **34,900 LBS -1**
22,450 LBS -2

NOTE:
 SEE FIGURE 2 AS SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTIO
 CHUTE DESCRIPTION.

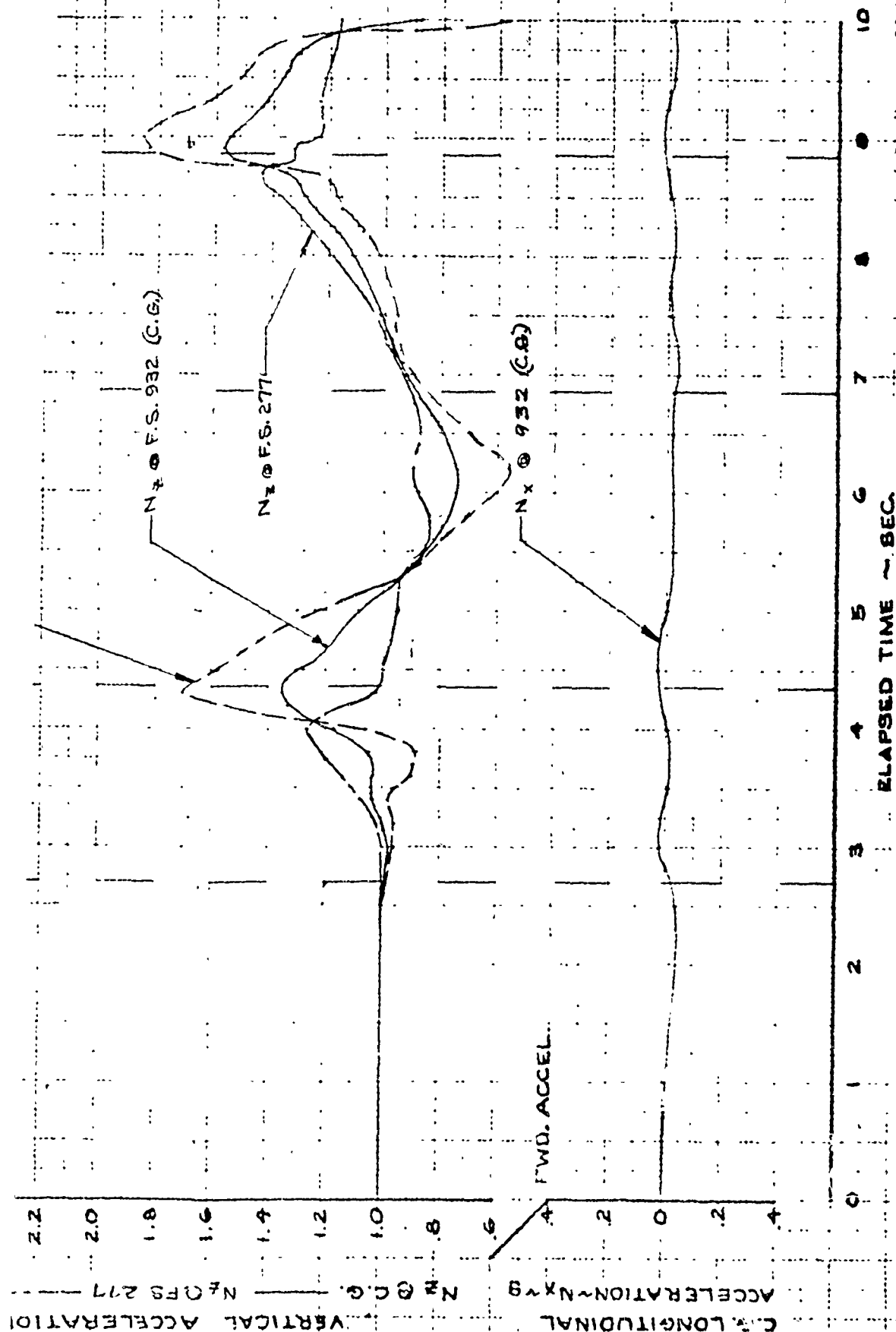
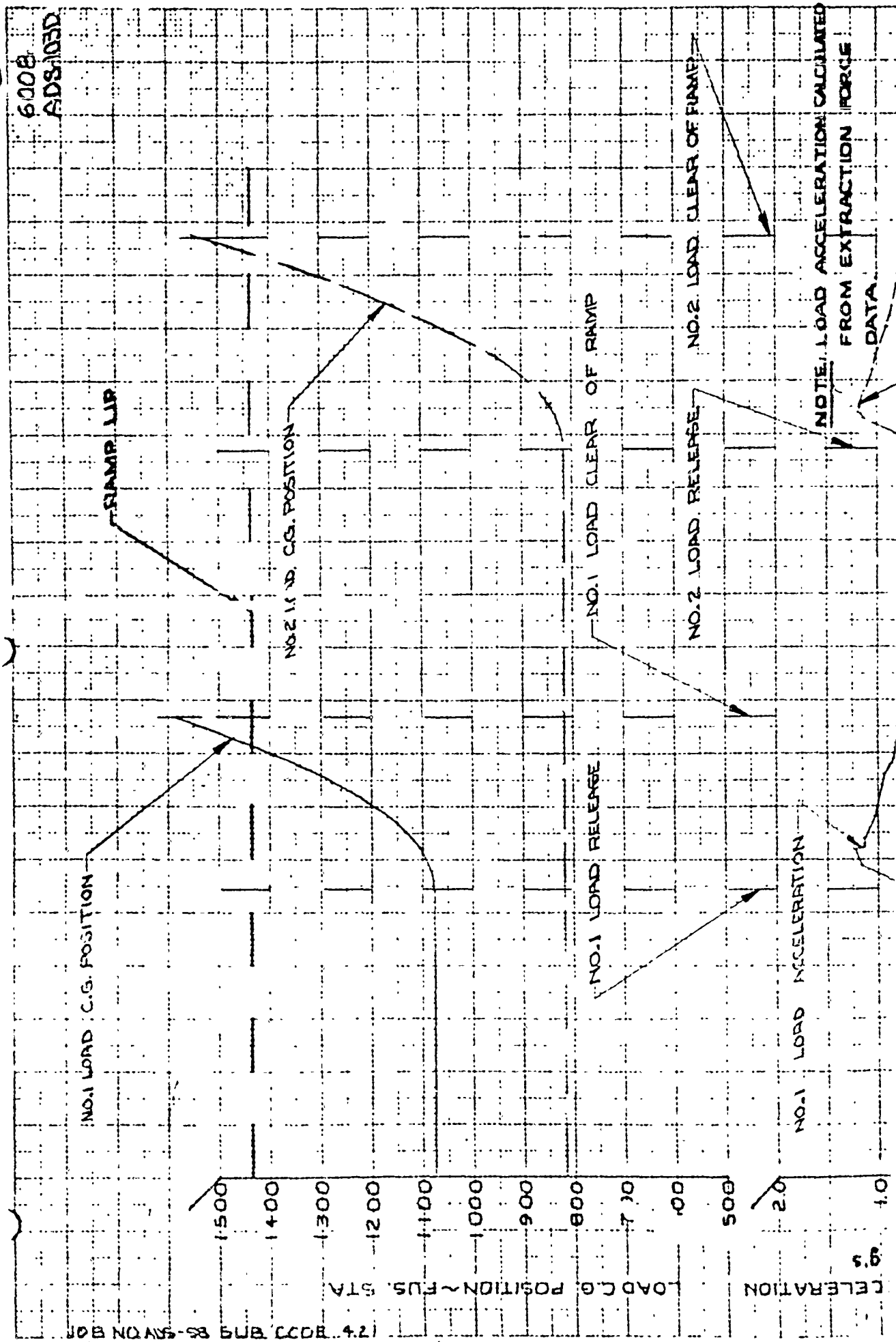


FIGURE F-2C

6008
 ADS-103



PREPARED BY T.R.D.
 DATE 6-29-68
 CHECKED BY *Jim*

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL C-141A
 PAGE F-12

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF G3-8077

LAC 50

TEST DATE: 6-28-68

FLIGHT 146

DROP NO. 138

SHEET 4 OF 7

CARGO WT. 34,900 LBS - 1
 22,450 LBS - 2

NOTE:
 SEE FIGURE 2, SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

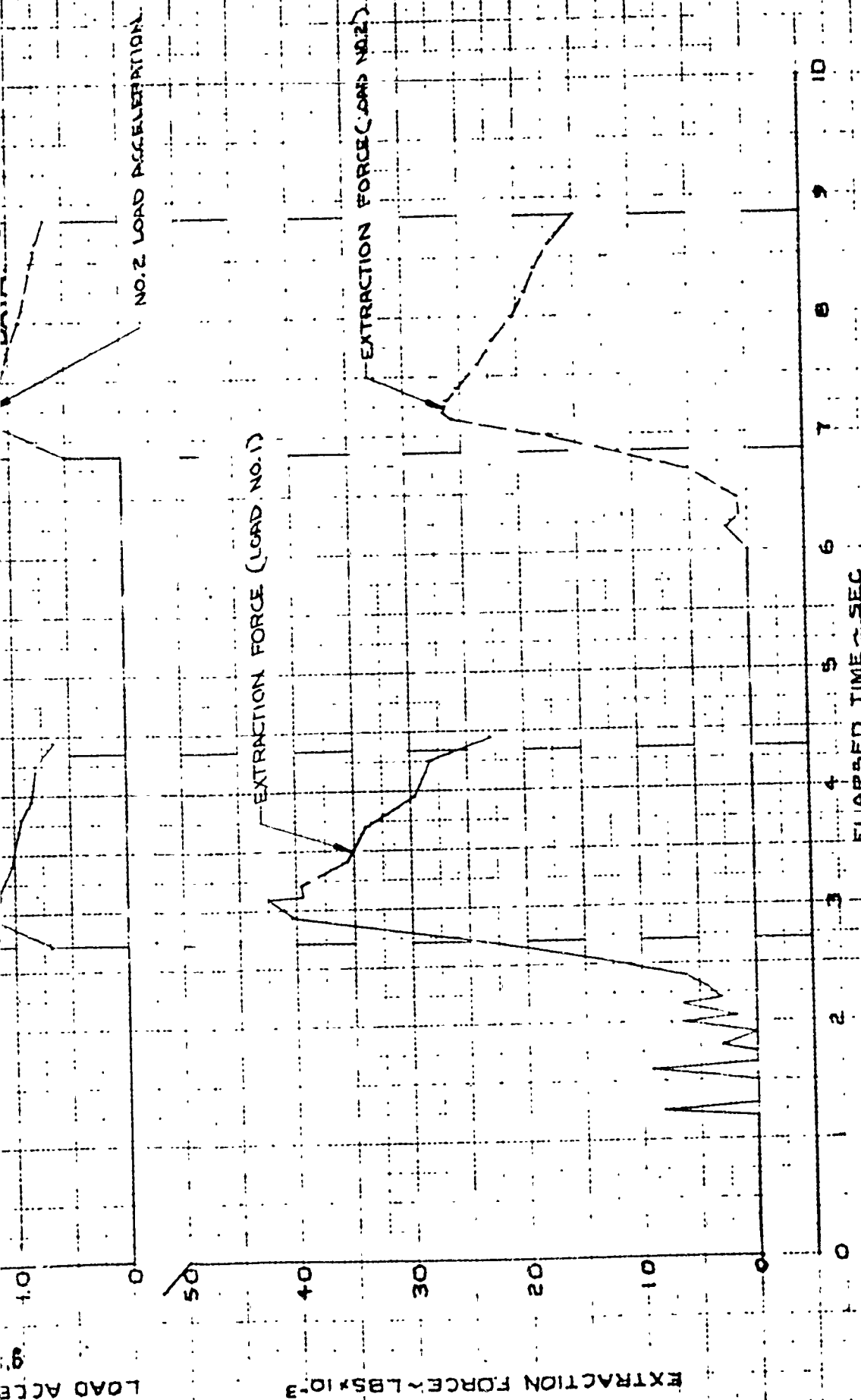


FIGURE F-2.0

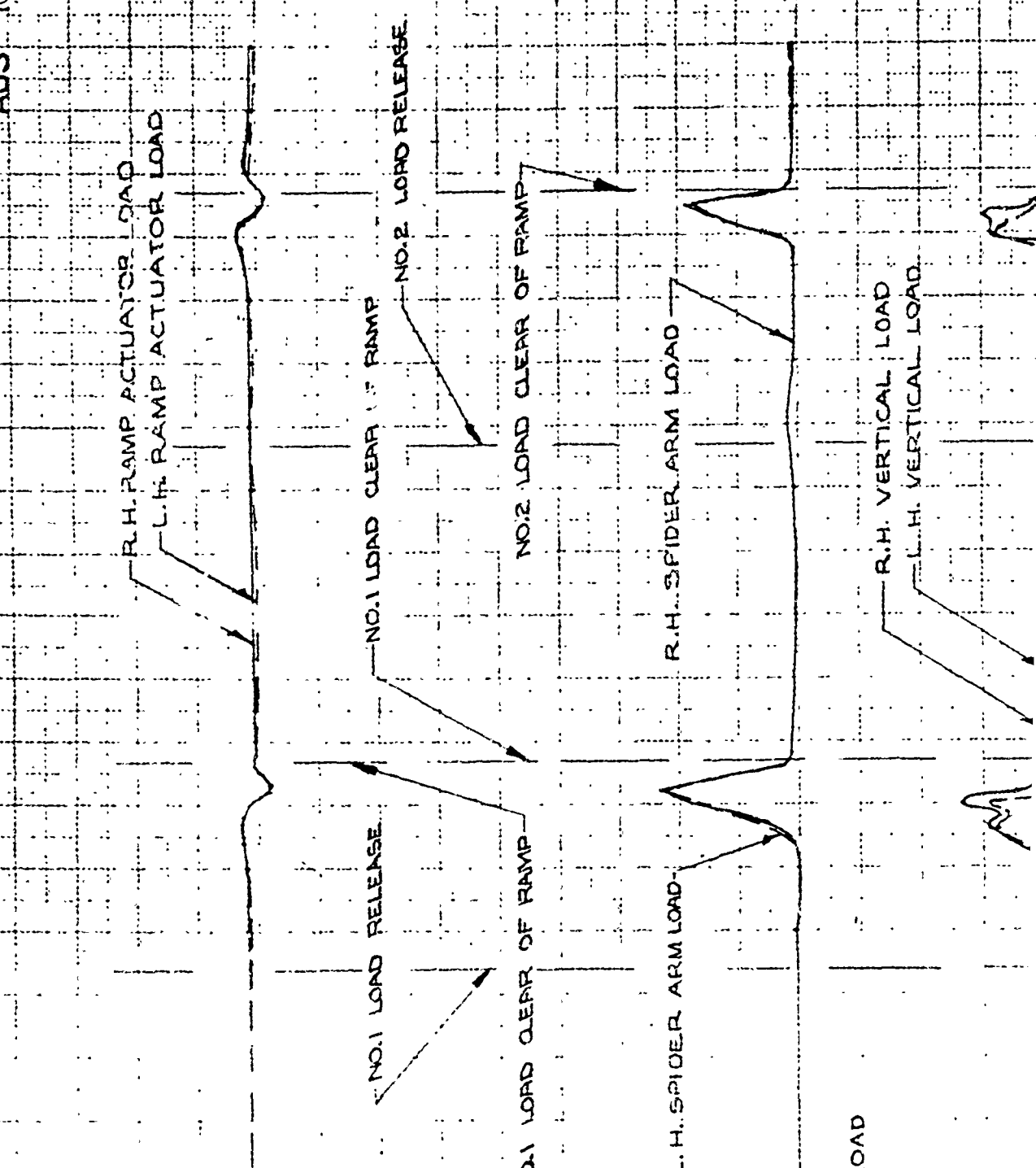
6008
 ADS-10

6008
ADSF 103E

TENSION
RAMP ACTUATOR LOAD
R.H. LBS. X 10⁻³
L.H. LBS. X 10⁻³

TENSION
ADS LINK AXIAL LOAD
R.H. LBS. X 10⁻³
L.H. LBS. X 10⁻³

DOWN LOAD
VERTICAL LOAD
R.H. LBS. X 10⁻³
L.H. LBS. X 10⁻³



PREPARED BY: FLW
 DATE: 6-30-65
 CHECKED BY: JWD

TO: U.S. AIR FORCE

REPORT NO.: ER 5473
 MODEL: C-141A
 PAGE: P-13

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL: C-141A
 AF: 63-8077 LAC: 6008
 TEST DATE: 6-28-65
 FLIGHT: 146 DROP NO: 38

SHEET 5 OF 7

CARGO WT. 34900 LBS -1
22450 LBS -2

NOTE:
 SEE FIGURE F-2A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

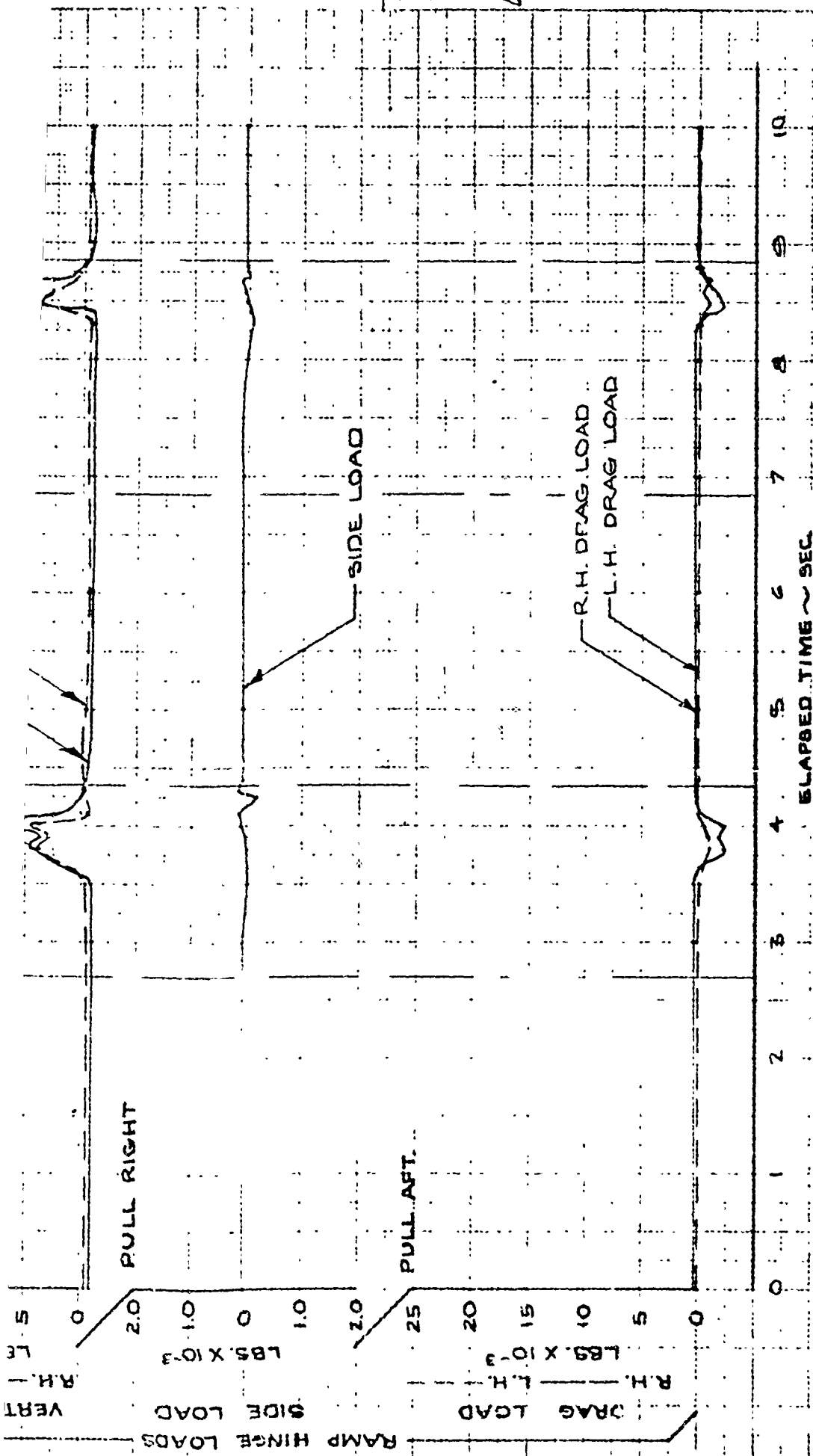


FIGURE F-2E

6008
 ADS-10

ERY

08

38

-1
-2

103E

6008
ADS-103F

COMPRESSION

L.H. PETAL DOOR ACTUATOR LOAD

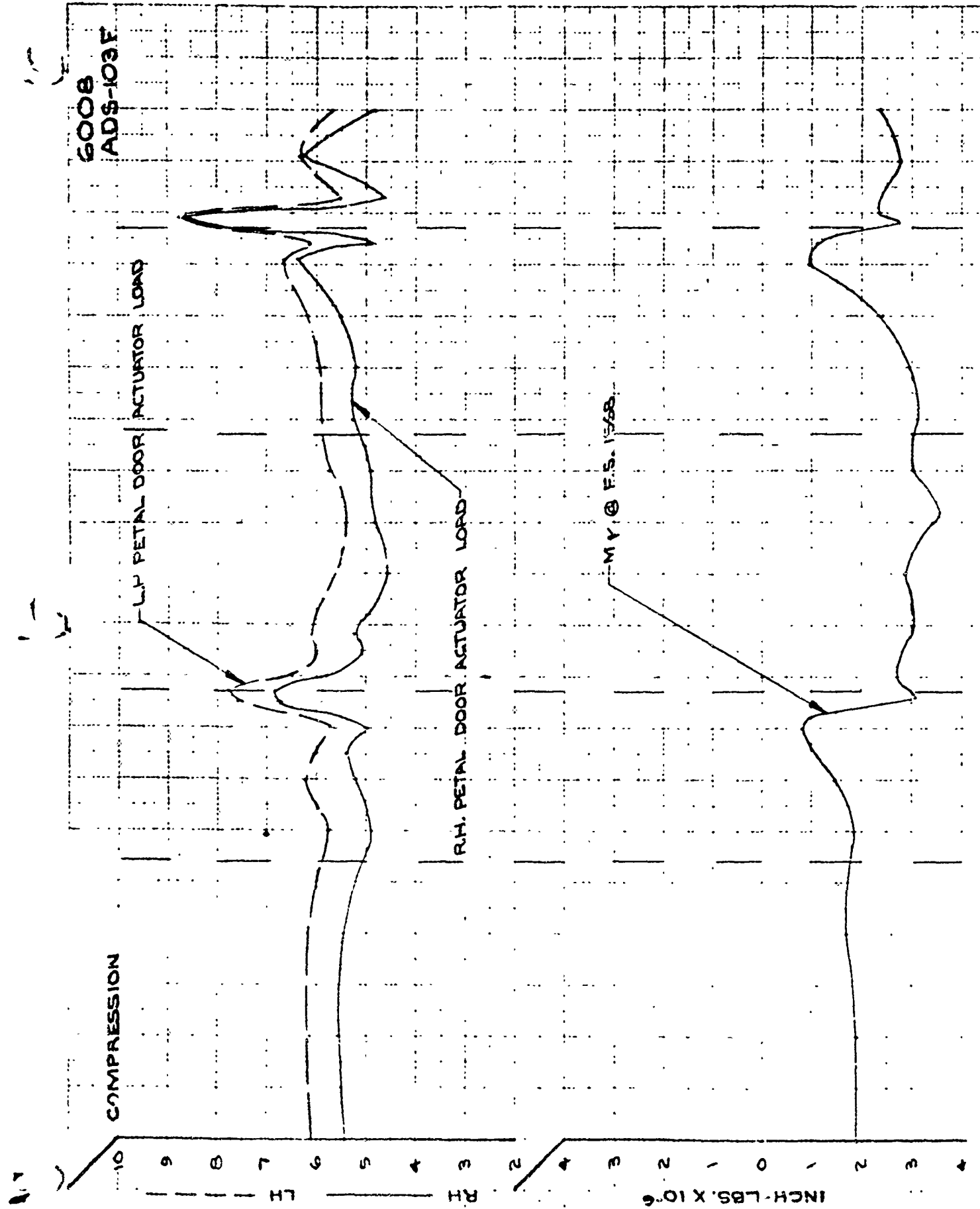
R.H. PETAL DOOR ACTUATOR LOAD

MY @ F.S. 1568

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10³

JOB NO. MS-58 SUB. CODE 4.2.1

VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁶



T.E.D
6-30-65
JUN

FR 5473
C-141A
F-14

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE: 6-28-65
FLIGHT ~ 146 DROP NO ~ 38

SHEET 6 OF 7

CARGO WT. 34,900 LBS - 1
22,450 LBS - 2

NOTE:
SEE FIGURE F-2 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

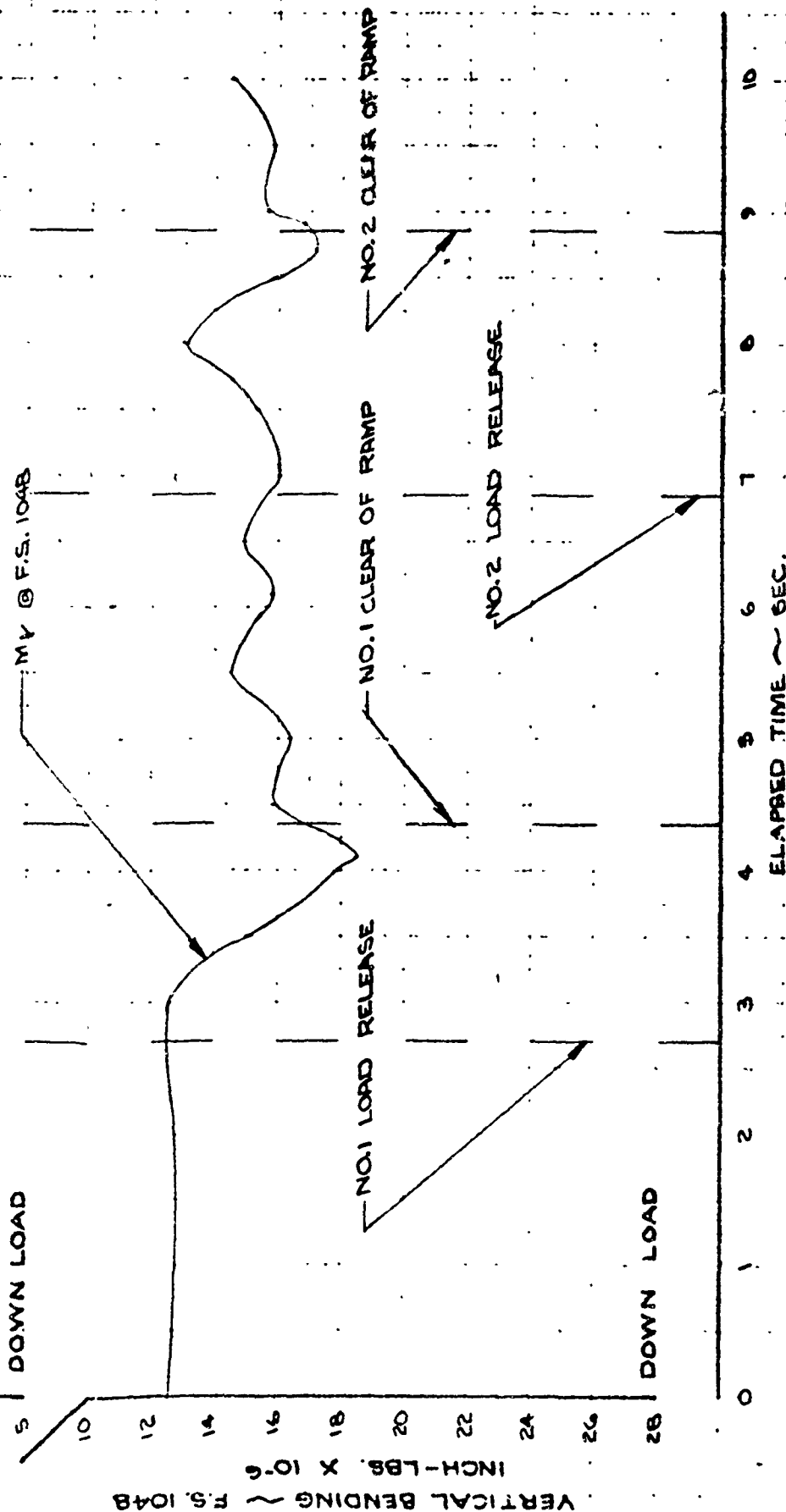
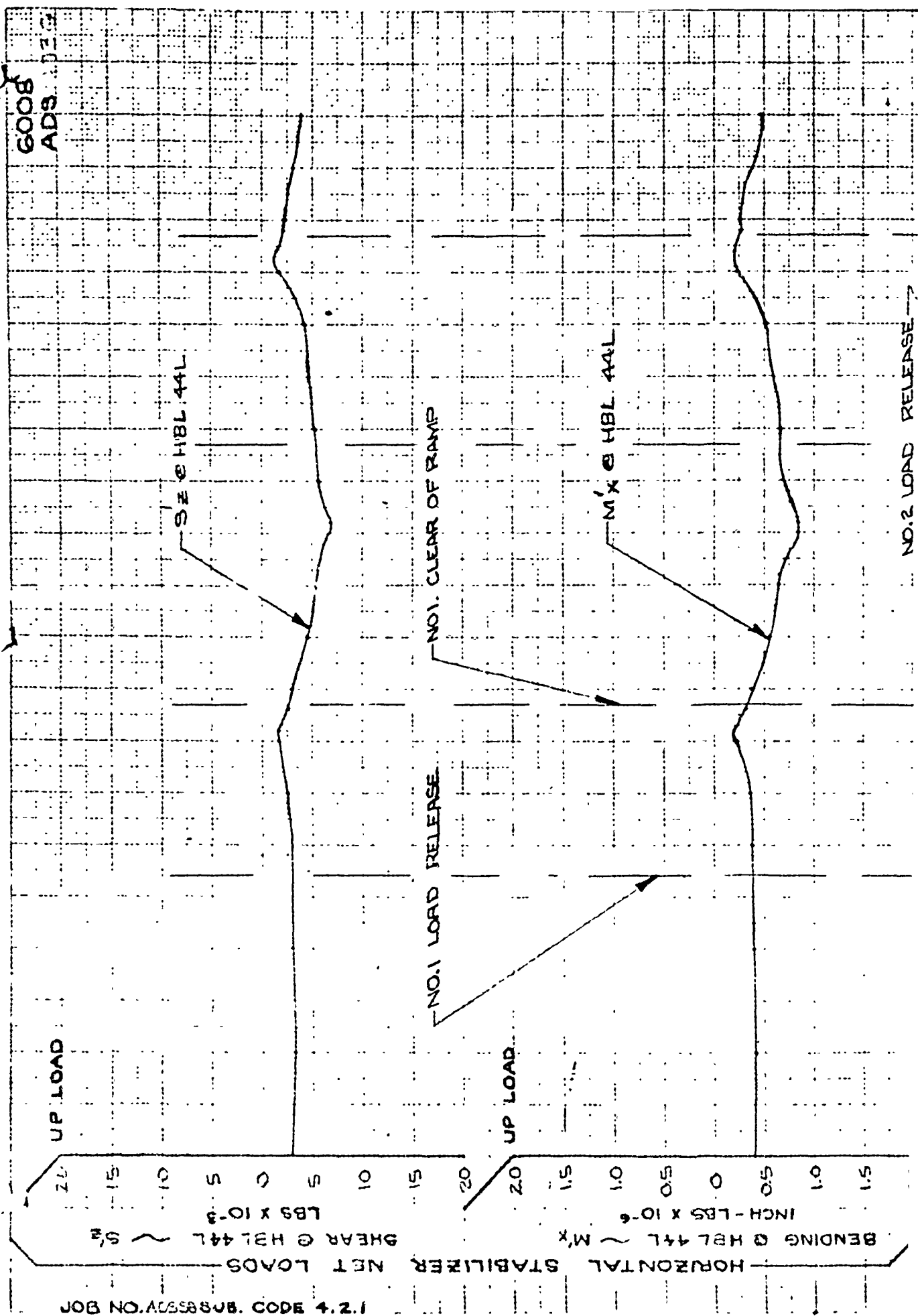


FIGURE F-2F

6008
ADS-103F

JOB NO. ALES88UB. CODE 4.2.1



PREPARED BY: KCH
 DATE: 6-30-65
 CHECKED BY: JMT

REPORT NO: ER 5473
 MODEL: C-141A
 PAGE: F-15

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF65-5077 LAC 6008
 TEST DATE: 6-28-65
 FLIGHT 14G. DROP NO. 38

SHEET 7 OF 7

CARGO WT. 34900 LBS. -1
 22450 LBS. -2

NOTE:
 SEE FIGURE F-24 SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

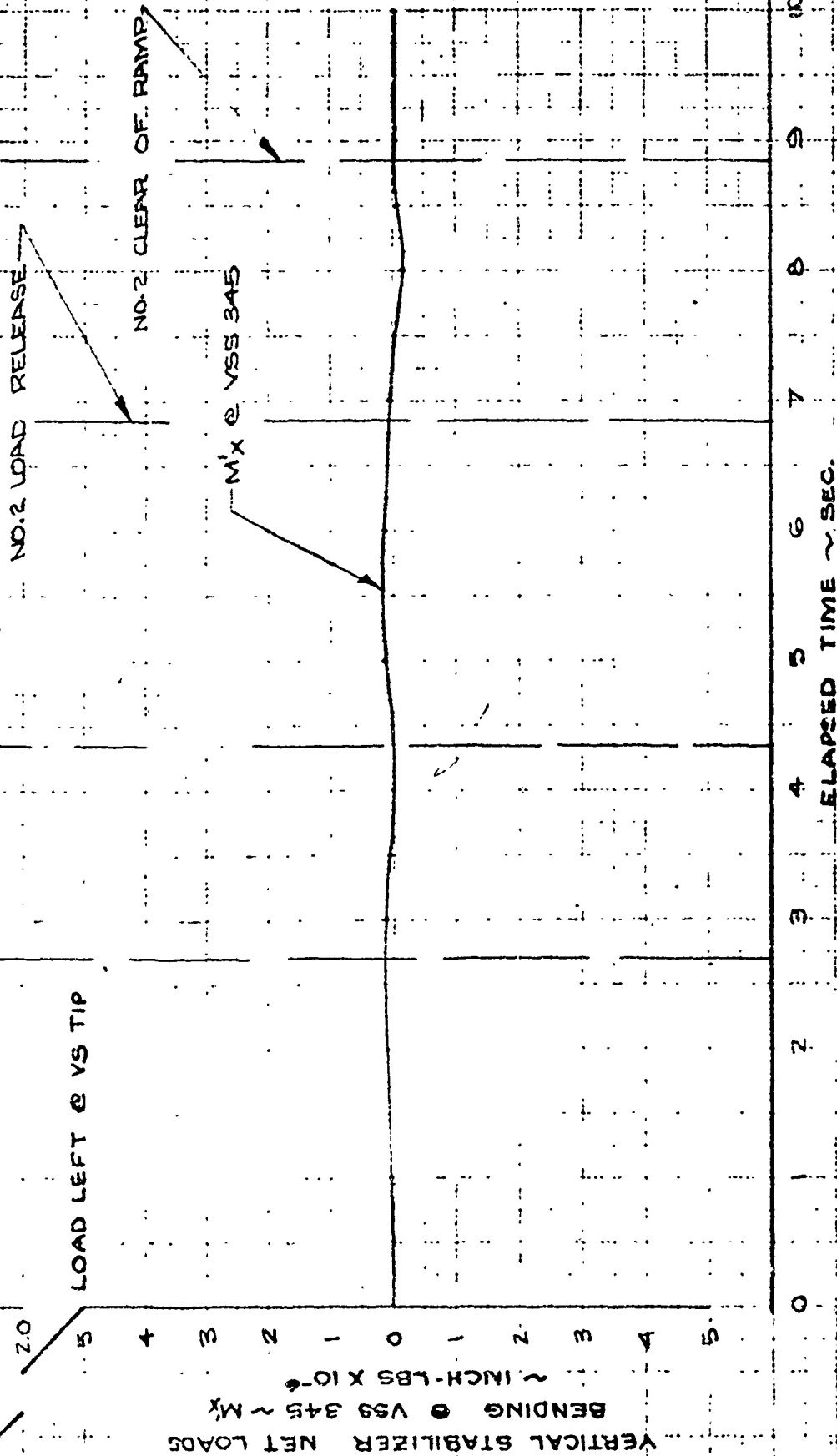


FIGURE F-26

RY

DB

B

03G

6008

ADSLQIA

LOAD NO. 2 RELEASE
LOAD NO. 1 CLEAR OF WARD

LOAD NO. 1 RELEASE
LOAD NO. 2 CLEAR OF WARD

NOSE UP
NOSE LEFT
RIGHT ROLL

25

20

15

10

5

5

10

15

20

25

NOSE UP
NOSE LEFT
RIGHT ROLL

20

15

10

5

0

ATTITUDES - DEC.

AIRCRAFT ATTITUDE

PREPARED BY FCW
DATE 7-1-65
CHECKED BY JWP

OFFICE OF THE JUDGE ADVOCATE GENERAL
U.S. AIR FORCE

REPORT NO. ER 5473
MODEL C-141A
PAGE P-16

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF638077 LAC 64
TEST DATE 6-30-65
FLIGHT 148 DROP NO. 3

SHEET 1 OF 7

CARGO WT. 35030 LBS.
29600 LBS.

RUN CONDITIONS

1. G.W. ~ 225100 LBS., 190070
2. C.G. PRIOR TO DROP ~ 33.5 - 23.0%
3. C.G. AFTER DROP ~ 23.0 - 30.3%
4. FLAPS ~ 65%
5. GEAR ~ UP
6. AVG. EPR ~ 1.30 (4 ENGINES)
7. α ~ 0.25 DEG (AC N.D.)

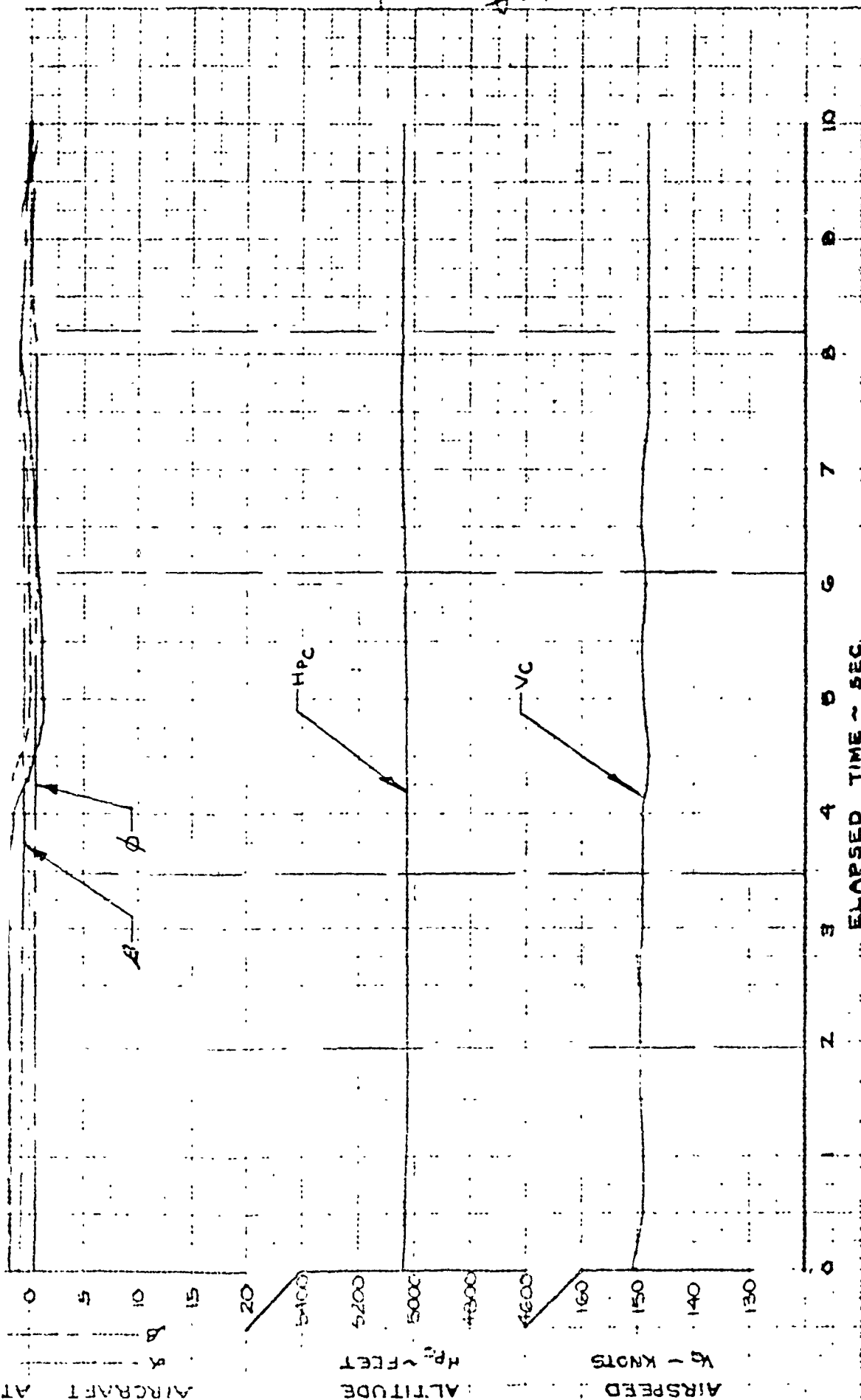
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 283 IN @ 240 IN
3. CARGO C.G. POSITIONS
LONG. ~ F50 1099 @ 815
VERT. ~ WL @ 179 @ 175

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28' 32'
3. RATED CHUTE FLOW ~ 130 WT
4. EXTRACTION LINE LENGTH ~ 1

FIGURE F-3A



LIVERY

6008

5

0.39

2-1

2-2

70 LBS.

3.0%MAC

1.3%MAC

ES)

MS.

IN

15

75

POSITION

WT.

100

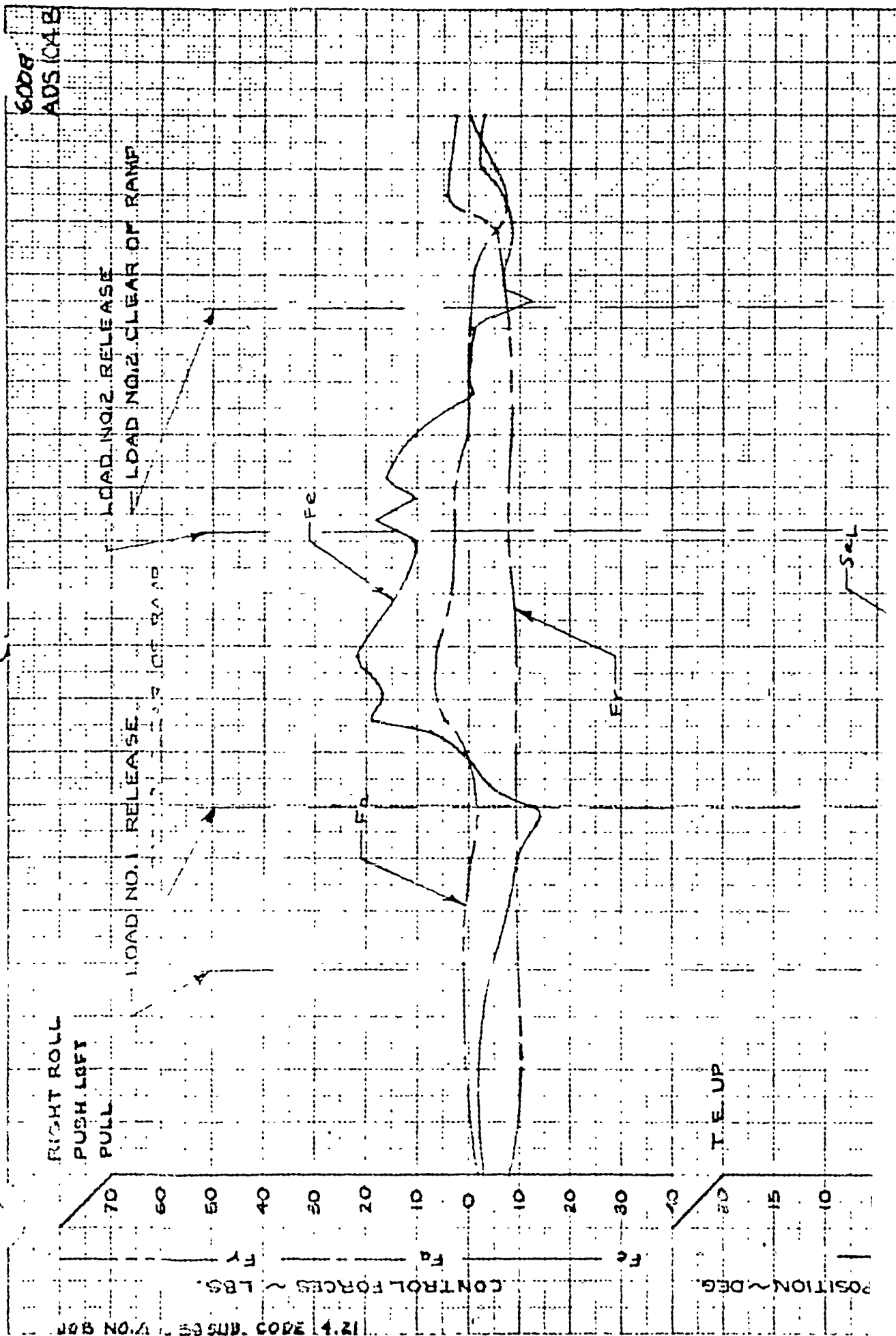
5.10

5000

05 2-A

12-16-65

2



PREPARED BY FCW
DATE 7-1-65
CHECKED BY JWD

LOCKHEED C-141A COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-17

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63 8077 LAC 6

TEST DATE 6-30-65

FLIGHT 148 DROP NO 30

SHEET 2 OF 7

CARGO WT 35030 LBS
29600 LBS

NOTE:
SEE FIGURE 3 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME - SEC

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONS

DEGREES

SE

SR

SE

LEFT AILERON POS

FIGURE F-3B

60
ADX

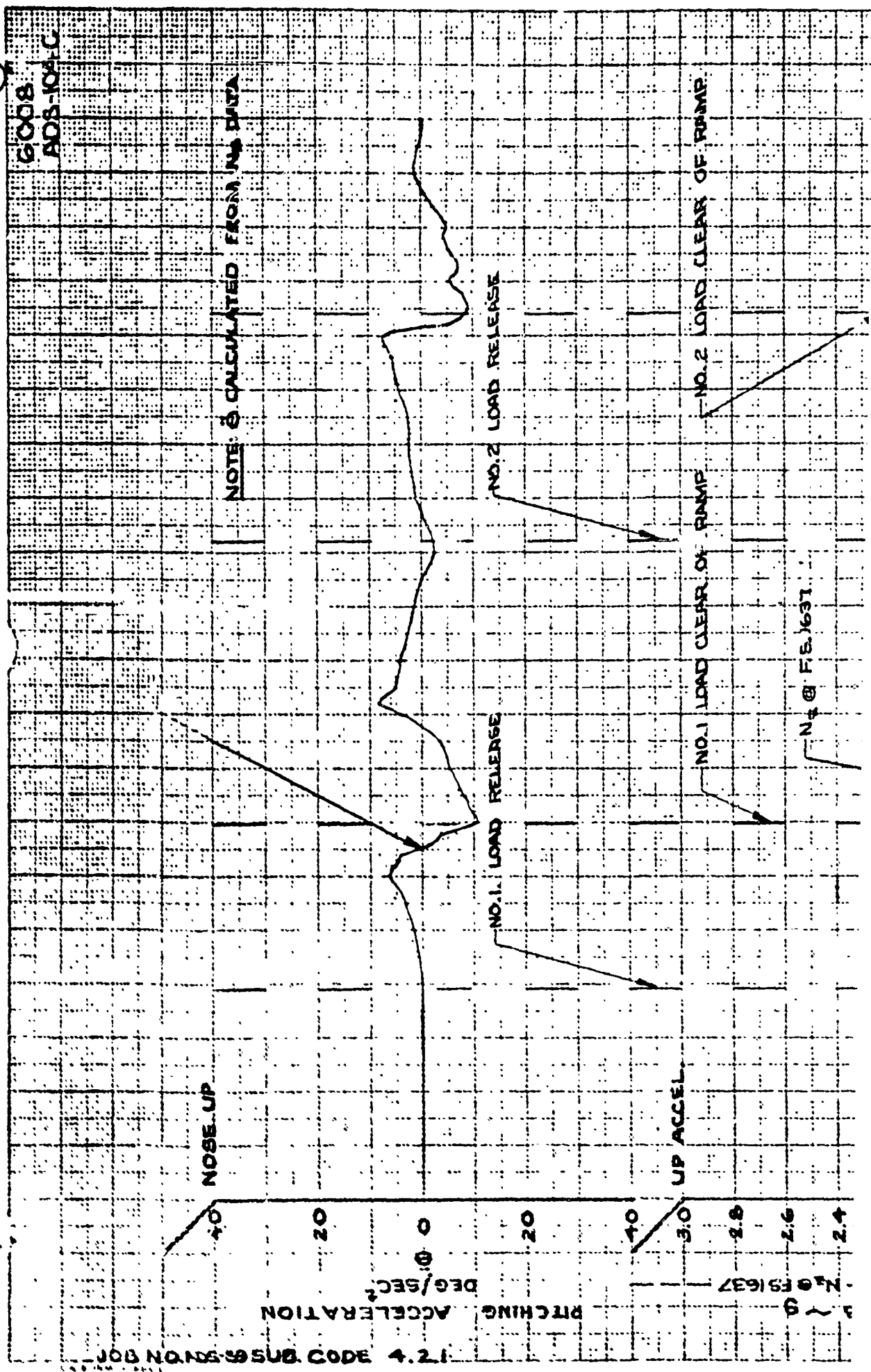
IVERY

C 6008
S
130

S +1
S -2

7
0
TION

6008
ADS 04B



PREPARED BY T.E.D.
 DATE 7-1-68
 CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. 44-1017
 MODEL C-141A
 PAGE F-18

TIME HISTORY OF AERIAL DELIV MANEUVER

MODEL C-141A
 AFGS-B077 LAC 501
 TEST DATE 6-30-65
 FLIGHT-148 DROP NO.~

SHEET 3 OF 7

CARGO WT. 35,030 LB
 29,600 LB

NOTE:
 SEE FIGURE F3 SHEET 1 OF
 FOR RUN CONDITIONS, CAP
 DESCRIPTION, AND EXTRA
 CHUTE DESCRIPTION.

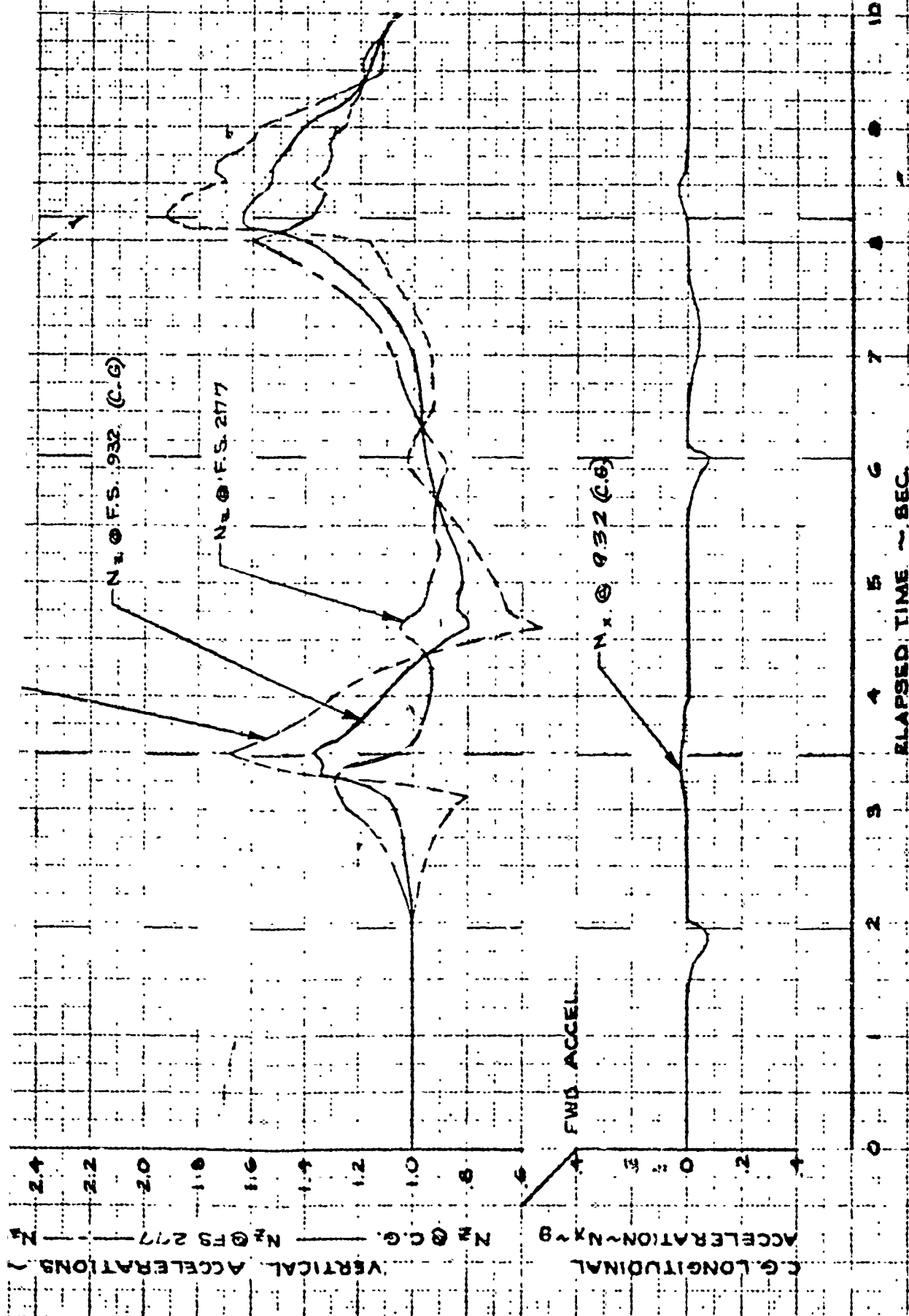
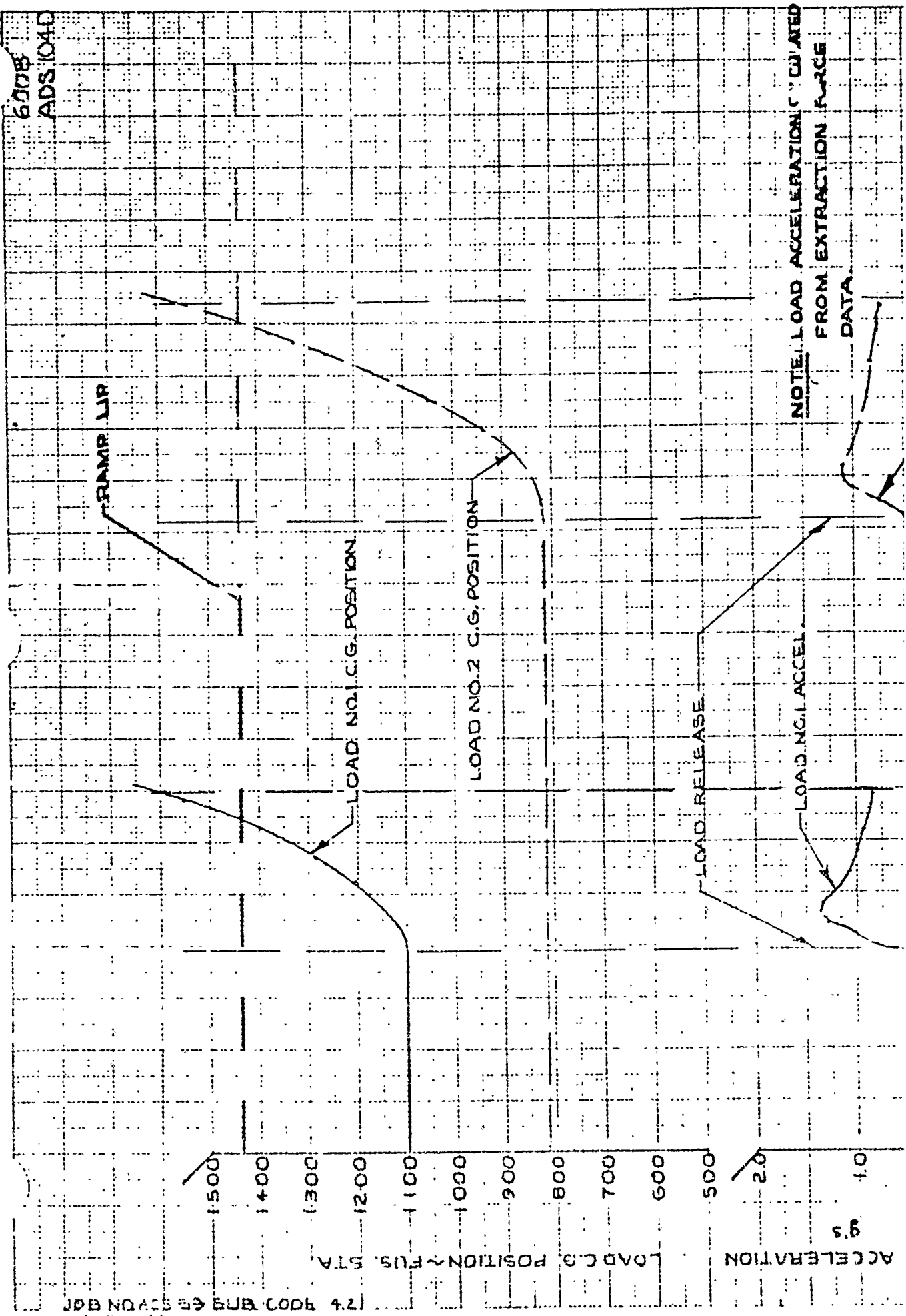


FIGURE F3C

109
 ADS

6008
ADS 1040



PREPARED BY: FCW
 DATE: 7-1-65
 CHECKED BY: JUP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
 MODEL: C-141A
 PAGE: F-19

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF 63-8077

LAC 600

TEST DATE 6-30-65

FLIGHT 148

DROP NO. 39

SHEET 4 OF 7

CARGO WT. 35030 LBS-1
29600 LBS-2

NOTE:

SEE FIGURE E-3A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION

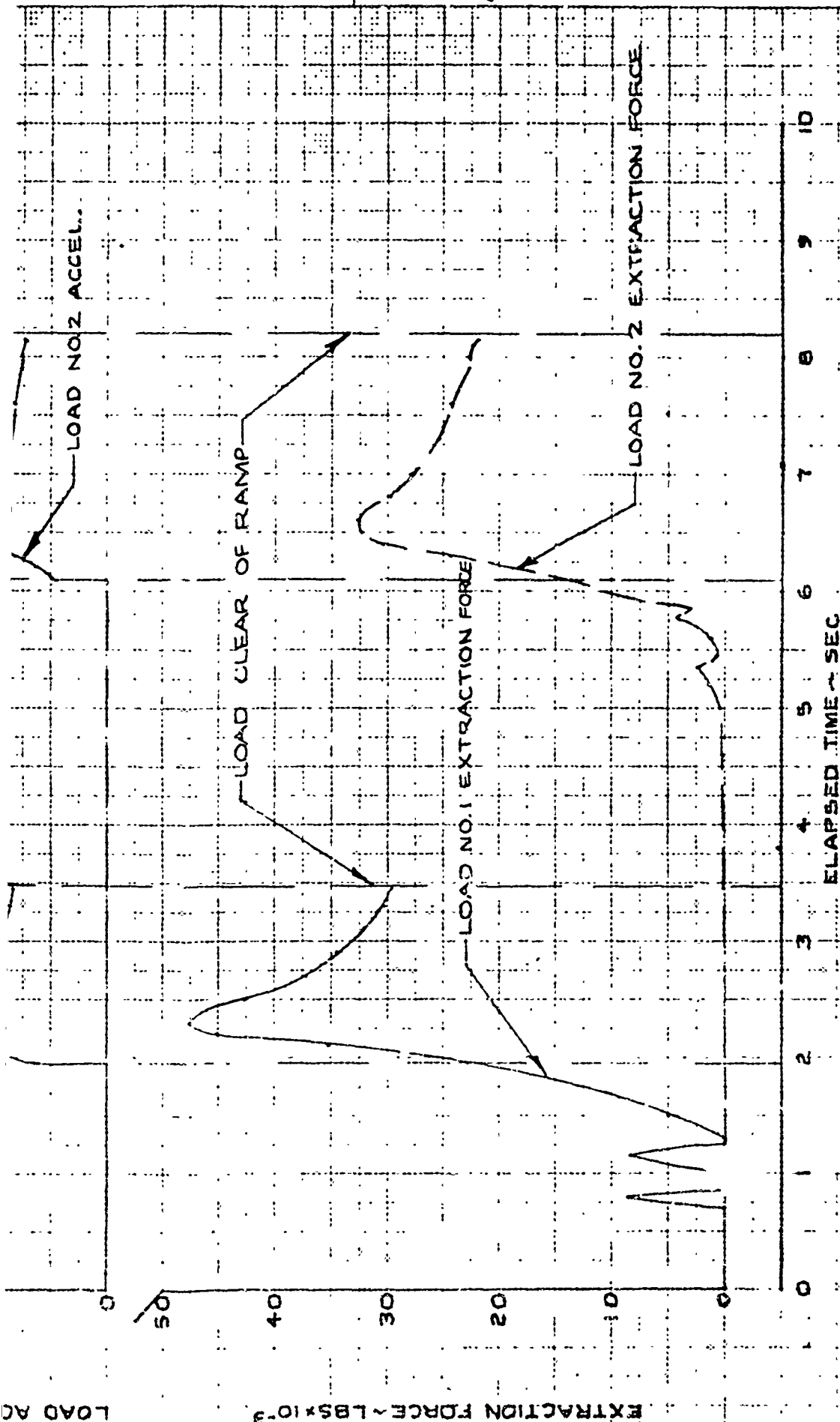


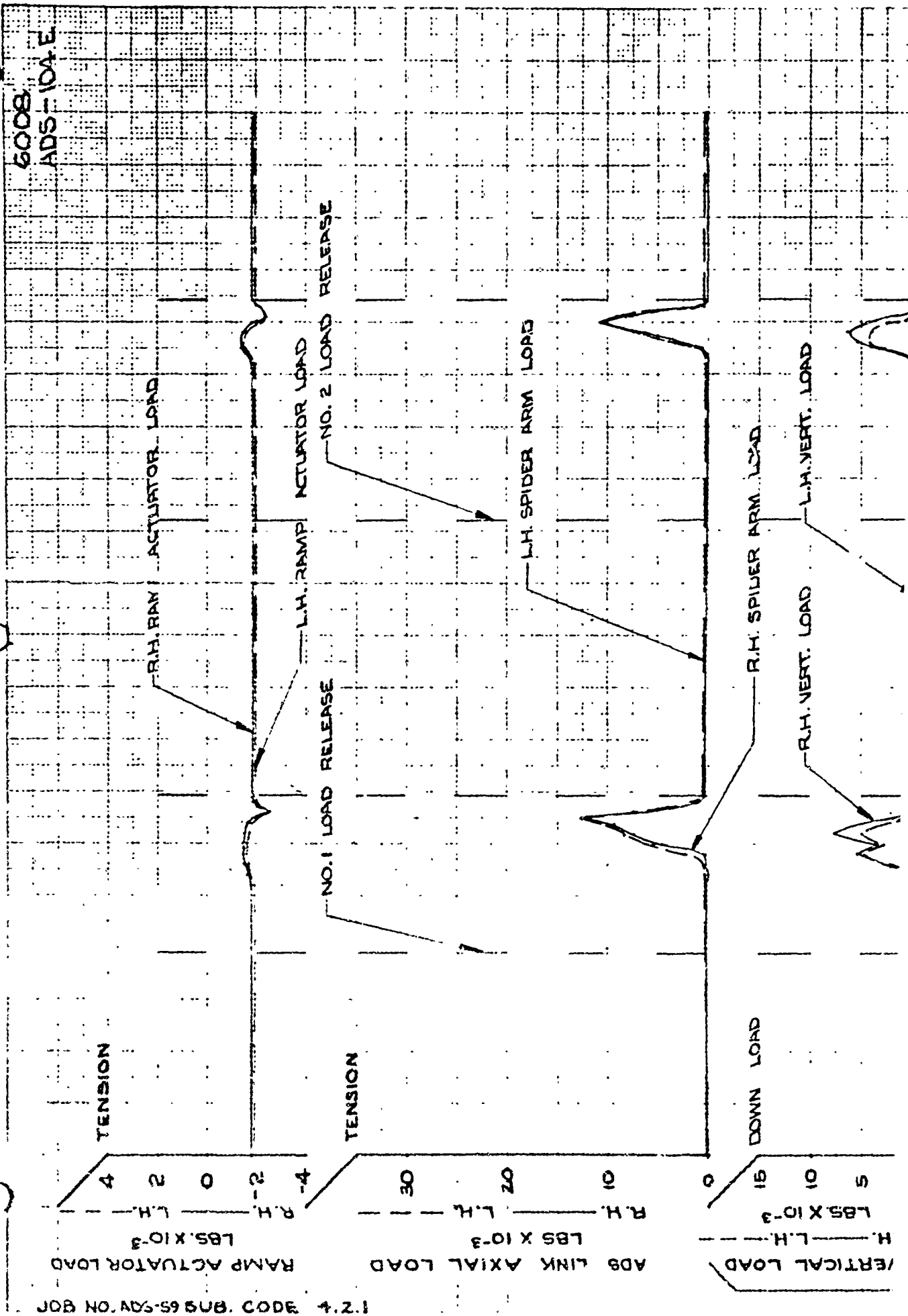
FIGURE E-3D

VERY

0008

21

040



PREPARED BY: J.E.D.
 DATE: 7-1-68
 JMD

REPORT NO: ER 5473
 MODEL: C-141A
 PAGE: F-20

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AF 63-8077 LAC 6008
 TEST DATE: 6-30-68
 FLIGHT-1A8 DROP NO-35

SHEET 5 OF 7

CARGO WT. 35,030 LBS-1
 29,600 LBS-2

NOTE:
 SEE FIGURE F-3A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

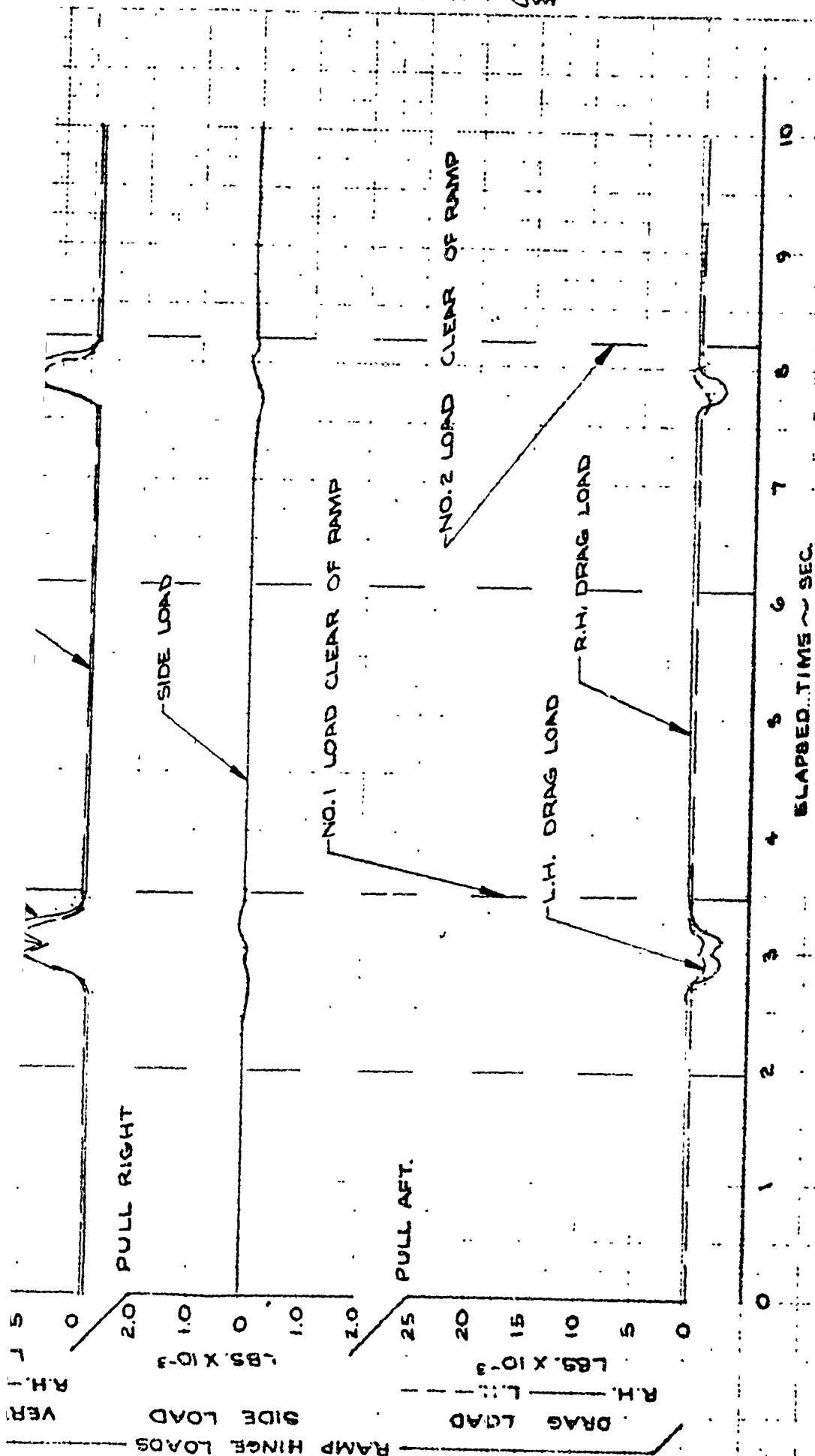


FIGURE F-3E

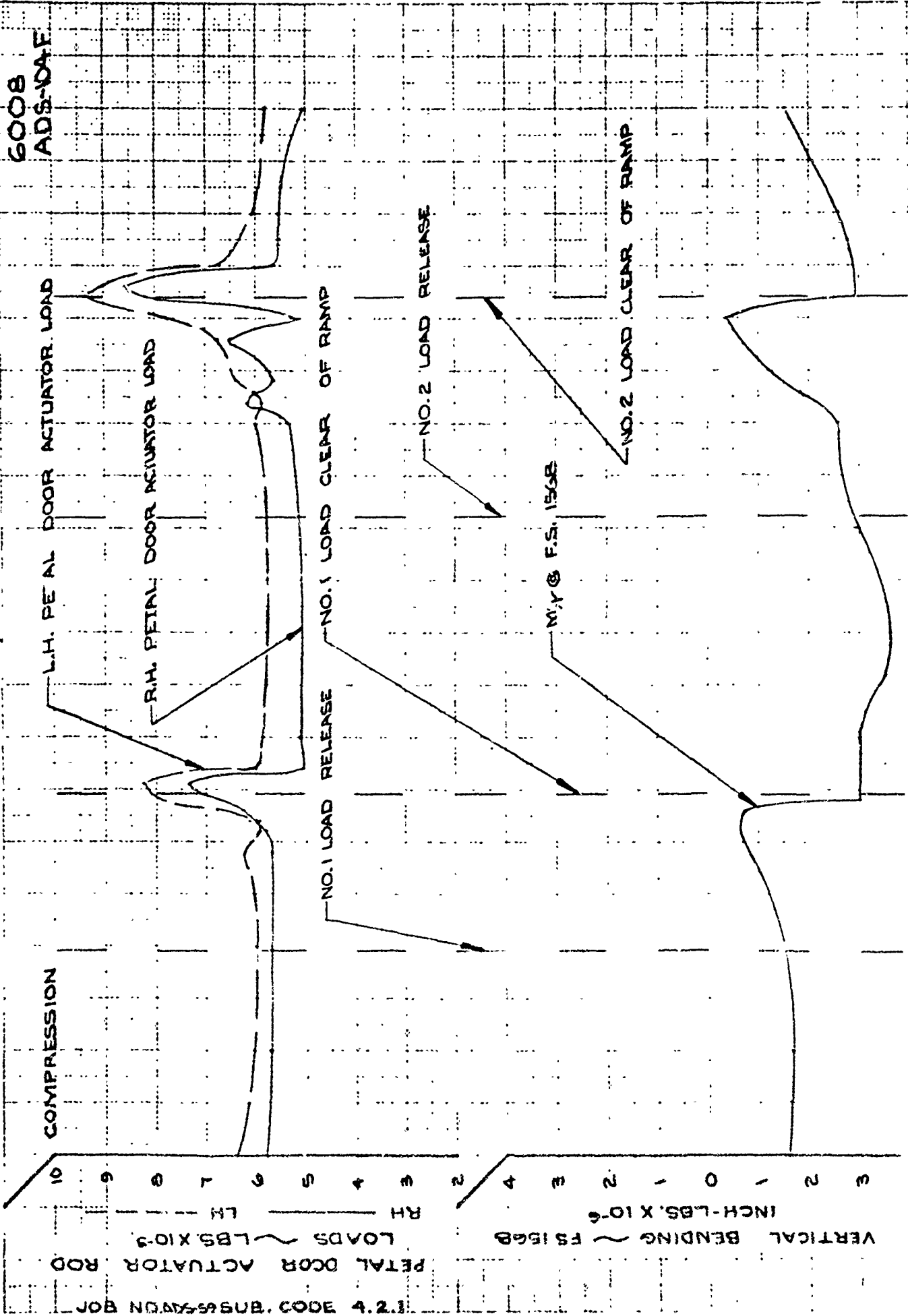
6008
 ADS-104

VERY

08

39

2



TED.
7-1-68
JWD

ER 5473
C-141A
P-21

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-8077

LAC 6008

TEST DATE: 6-30-68

FLIGHT-148

DROP NO 39

SHEET 6 OF 7

CARGO WT. 35,030 LBS-1
29,600 LBS-2

NOTE:
SEE FIGURE F-3A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

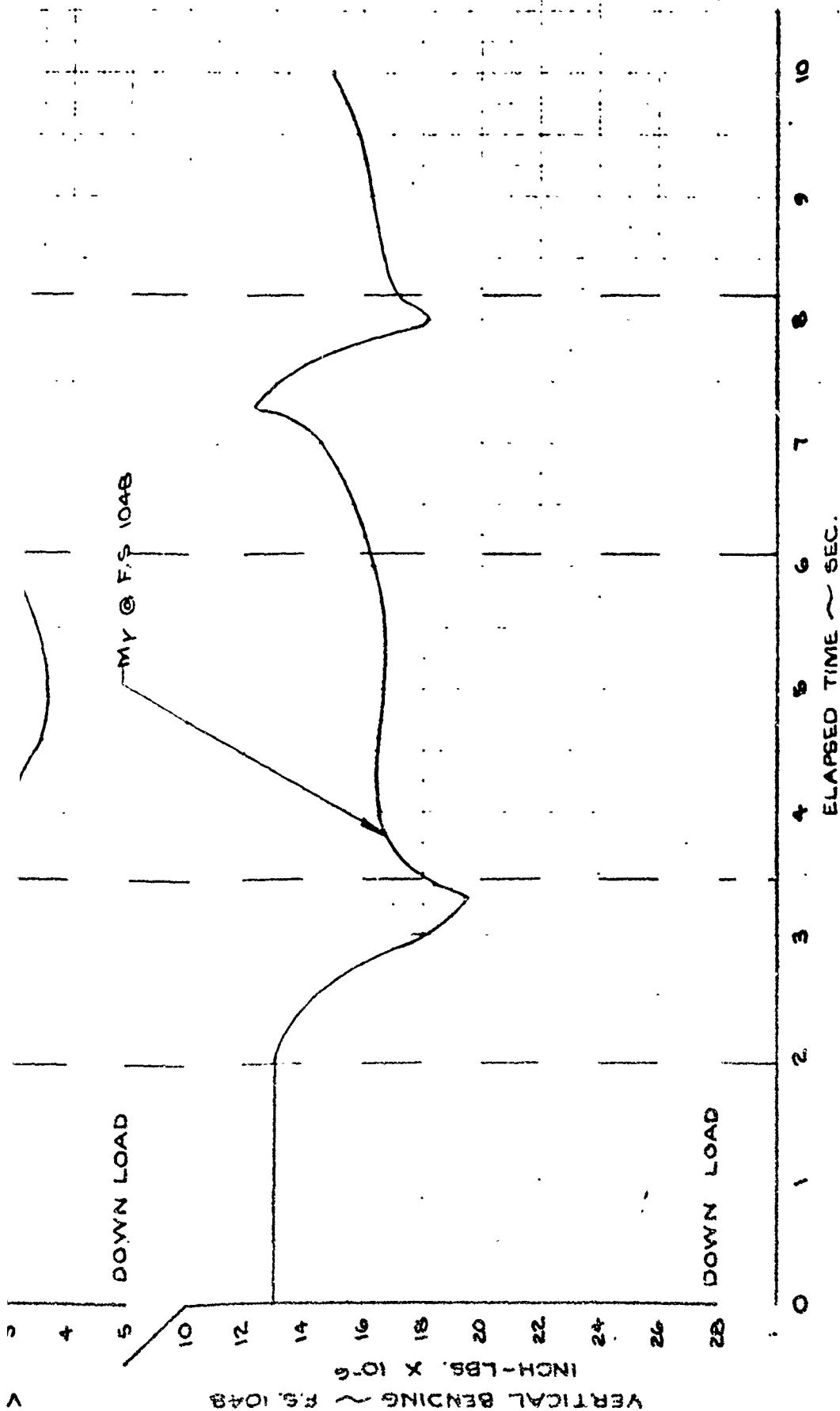
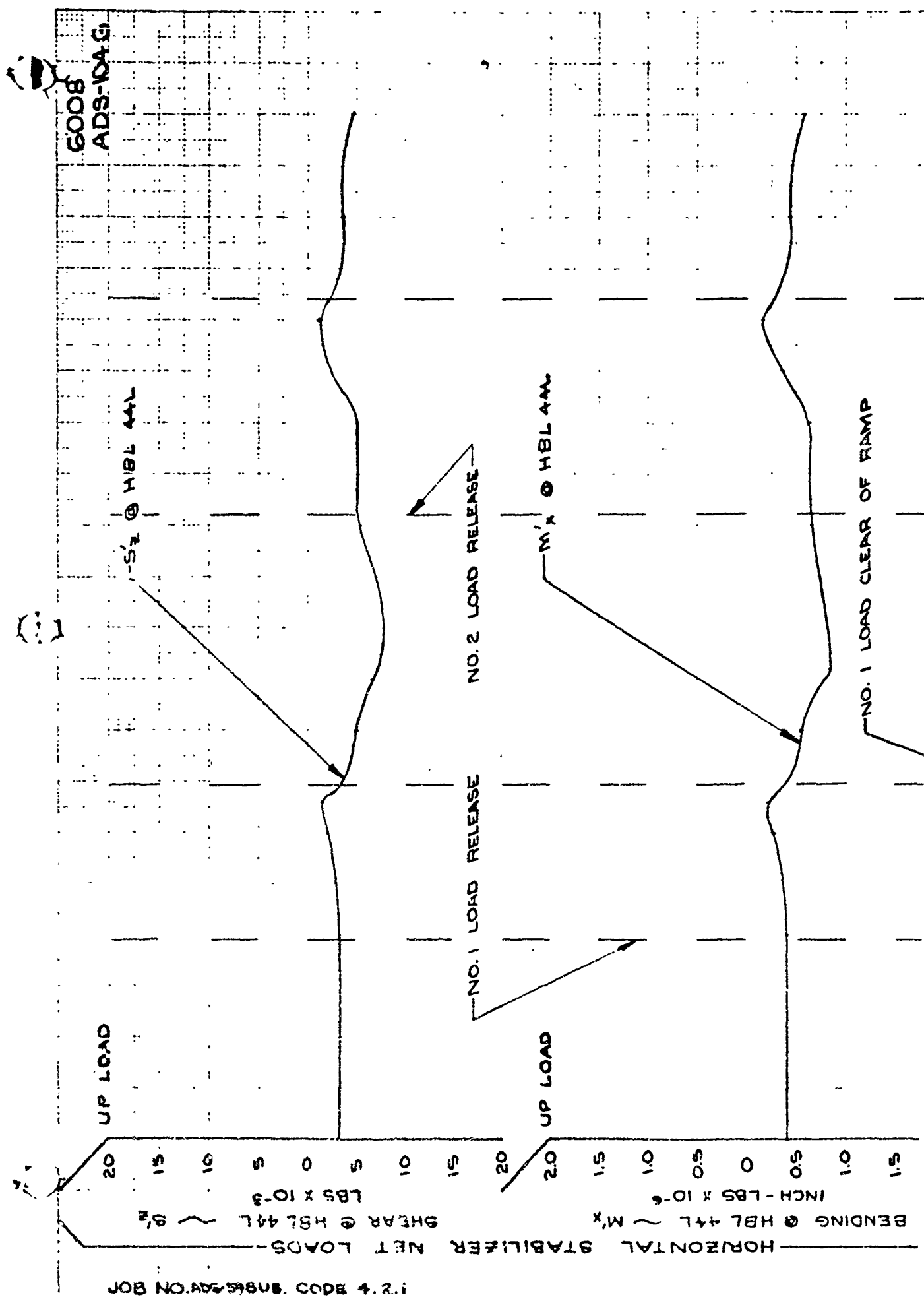


FIGURE F-3F

6008
ADG-10



T.E.D.
7-1-66
JAP

ER 5473
C-141A
F-22

TIME HISTORY OF AERIAL DELIVER
MANEUVER

MODEL C-141A

AF63-8077

LAC 600

TEST DATE: 6-30-66

FLIGHT-148

DROP NO. 39

SHEET 1 OF 1

CARGO WT. 35.030 LBS -1

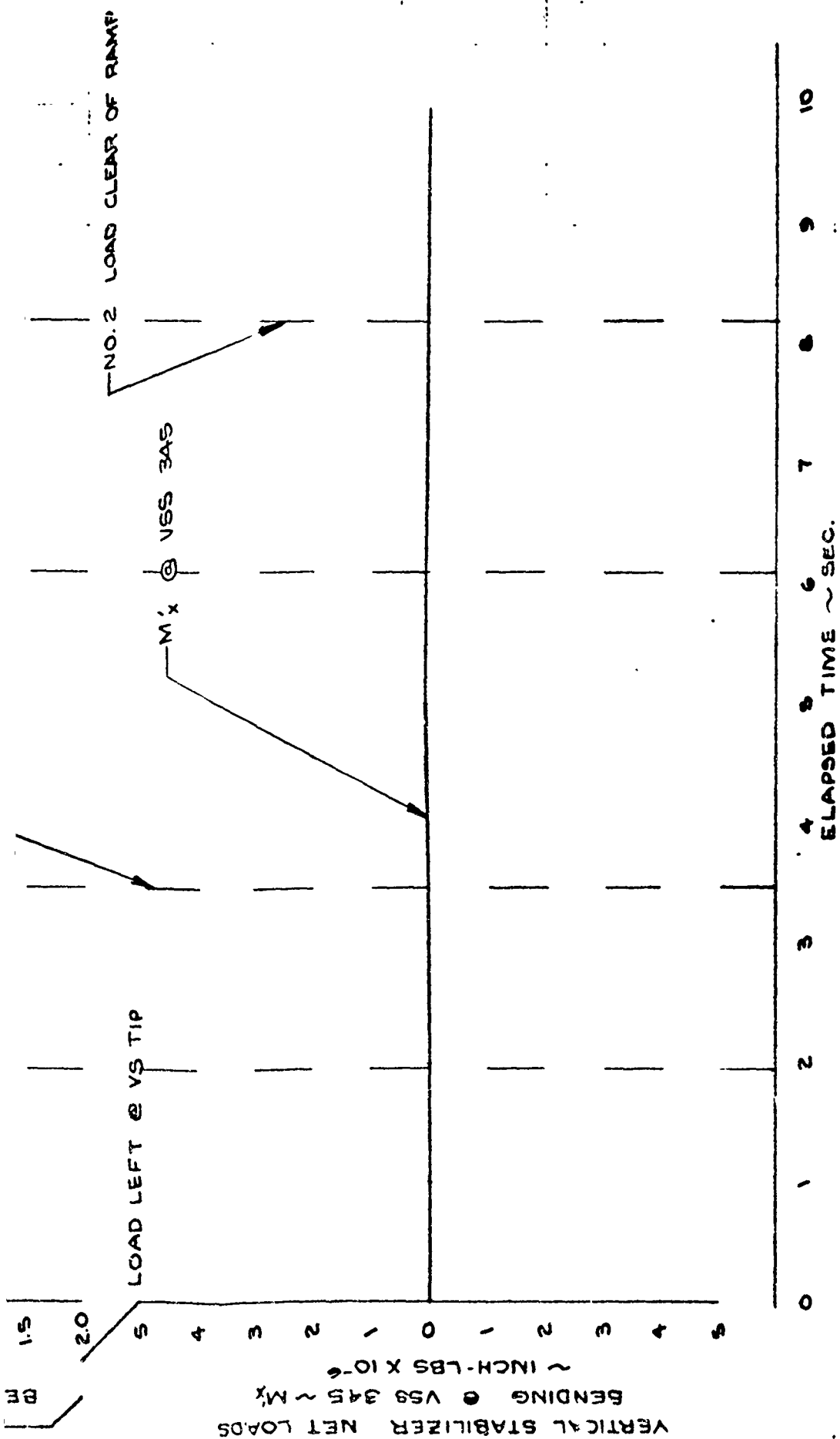
29.600 LBS -2

NOTE:

SEE FIGURE F-35 SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE F-35

6008
ADS-10A



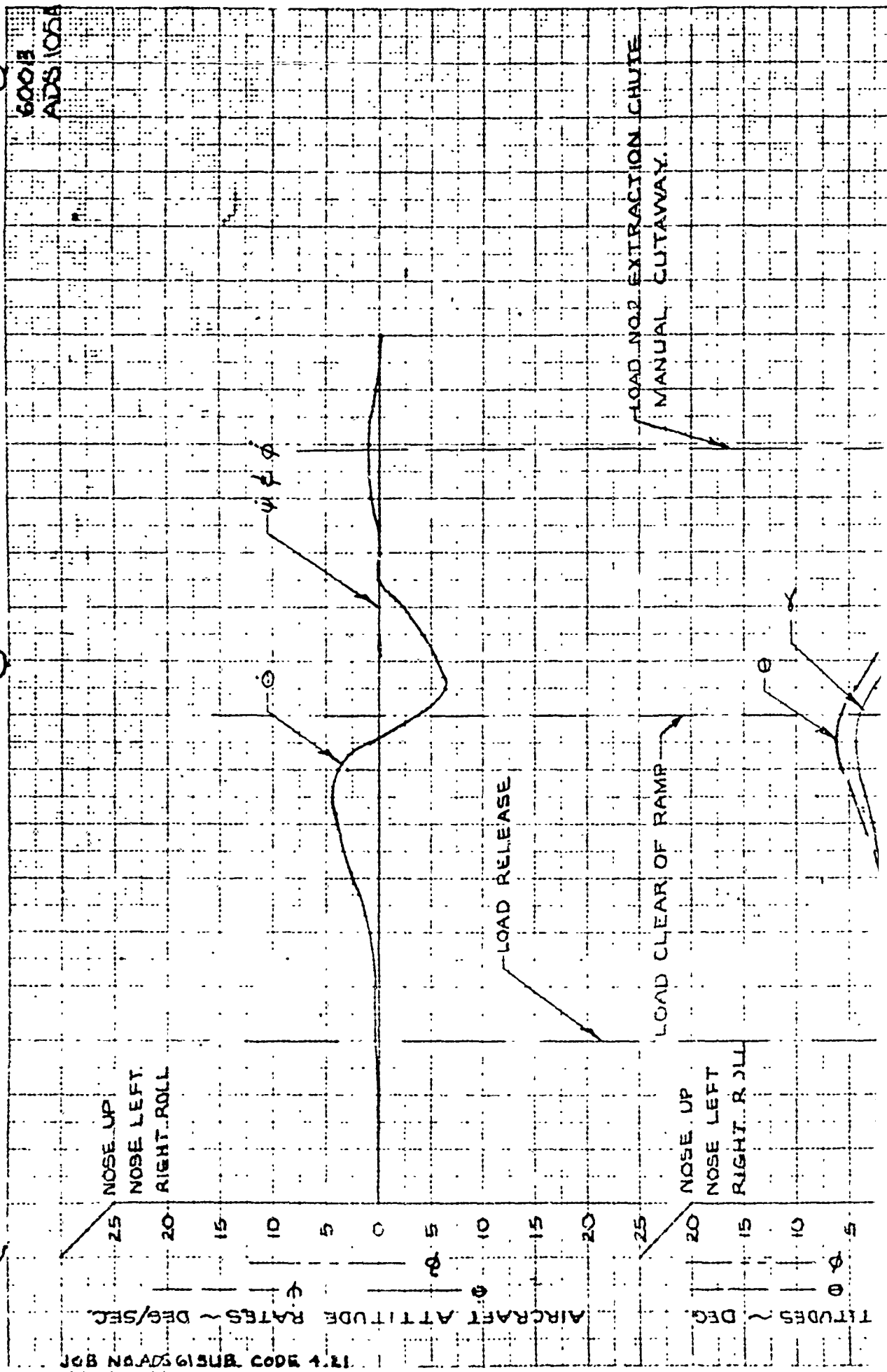
ERY

008

39

1
2

8
104G



PREPARED BY FCW
 DATE 7-7-65
 CHECKED BY JAP

LOCKHEED GEORGIA COMPANY
 A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 547
 MODEL G-147A
 PAGE P-23

TIME HISTORY OF AERIAL DEL MANEUVER

MODEL C-11A

AF638077 LAC

TEST DATE 7-2-65

FLIGHT 149 DROP NO

SHEET OF 7

CARGO WT. 35360 LB
 34650 LB

RUN CONDITIONS

1. G. W. ~ 227,700 LBS.
2. C. G. PRIOR TO DROP ~ 33.5%
3. C. G. AFTER DROP ~ 22.0%
4. FLAPS ~ 45%
5. GEAR ~ UP
6. AVG. EPR ~ 1.30 (4 ENGINES)
7. \dot{M} ~ 0.25 DFG. (A/C N.D.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN. 283
3. CARGO C.G. POSITIONS
LONG. ~ F3 1114 822
VERT. ~ WL 179 179

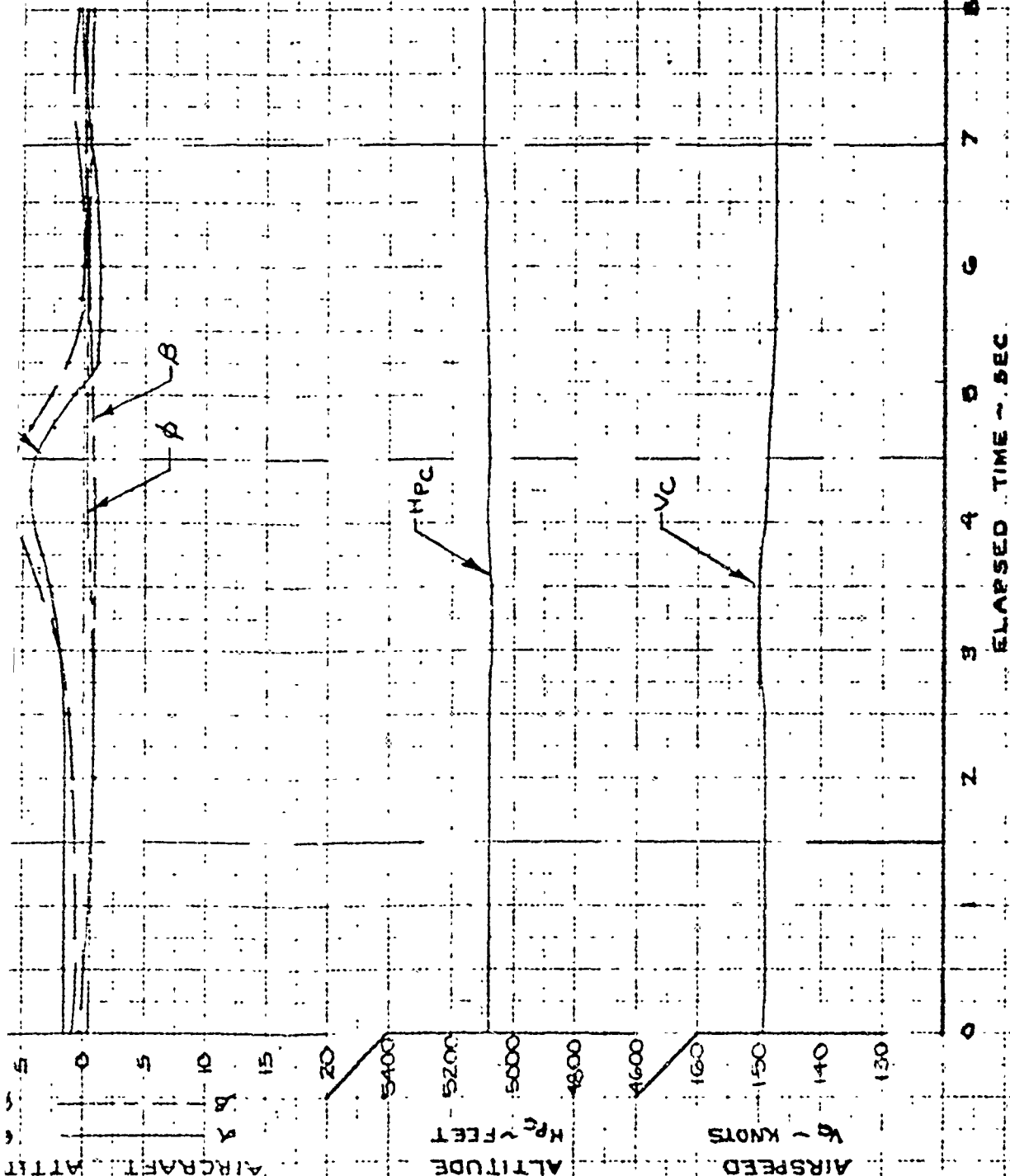
EXTRACTION CHUTE DESCR

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT
3. RATED CHUTE FORCE/CARGO
4. EXTRACTION LINE LENGTH

NOTE

SECOND LOAD NOT DROP
 DUE TO EXTRACTION SYS
 FAILURE.

FIGURE F-4A



5473
1414
23

DELIVERY

AC 600B

25

NO. 40

LBS-1

LBS-2

5.5% MAC

0% MAC

INES)

FORM

283 IN

322

79

SCRIPTION

2

T. 22FT

WT. 124

TH ~ 10FT

100FT

ROPPED

SYSTEM

600B

ADS 105A

SEC 12-16-63

1414

600B
ADS 105B

RIGHT ROLL
PUSH LEFT
PULL

70 60 50 40 30 20 10 0 10 20 30 40
20 15 10

F_z F_a F_y

CONTROL FORCES ~ LBS.

NO. 124 ADS 105B SUB. CODE 14 21

LOAD RELEASE

T.E. UP

LOAD NO. 2 EXTRACTION CHUTE
MANUAL CUTAWAY

50L

PREPARED BY FCW
 DATE 7-7-66
 CHECKED BY JUP

ED. J. HEDY OF LORAINA COMPANY
 ER 5473
 C-141A
 F-24

TIME HISTORY OF AERIAL DEL MANEUVER

MODEL C-141A
 AF 63 8077 LAC
 TEST DATE 7-2-66
 FLIGHT 149 DROP NO

SHEET 2 OF 7

CARGO WT. 35360 LB
 34650 LB

NOTE:
 SEE FIGURE 4 SHEET 1 OF 2
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACT
 CHUTE DESCRIPTION.

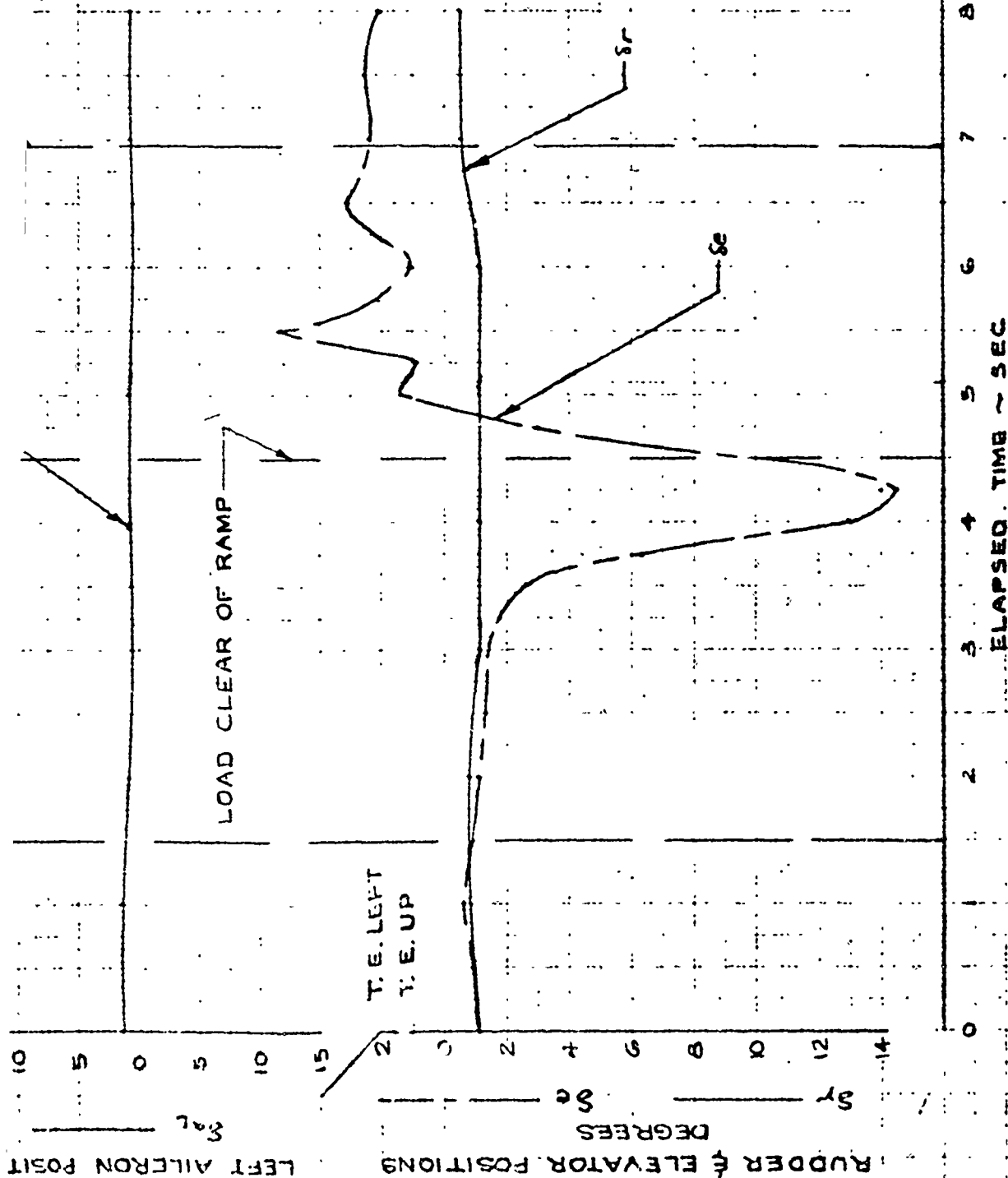
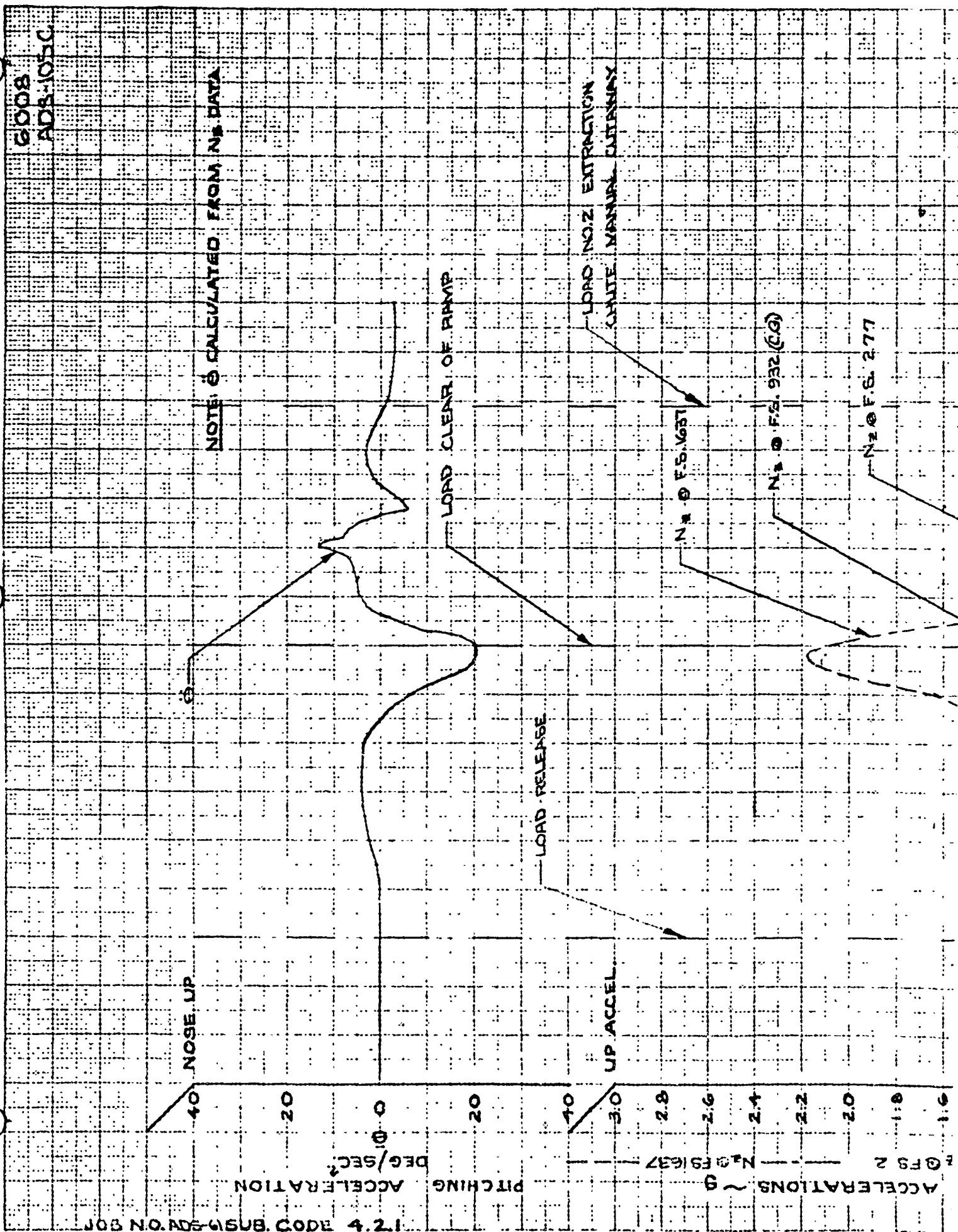


FIGURE F-4B

6008
ADS-1050



PREPARED BY **TED**

DATE **7-7-65**

CHECKED BY **JLP**

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO

ER 5473

MODEL

C-14A

FILE

P-25

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-2077

LAC 6008

TEST DATE 1-2-65

FLIGHT 149

DROP NO 40

SHEET 3 OF 7

CARGO WT. 35,360 LBS-1
34,650 LBS-2

NOTE:
SEE FIGURE 4 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

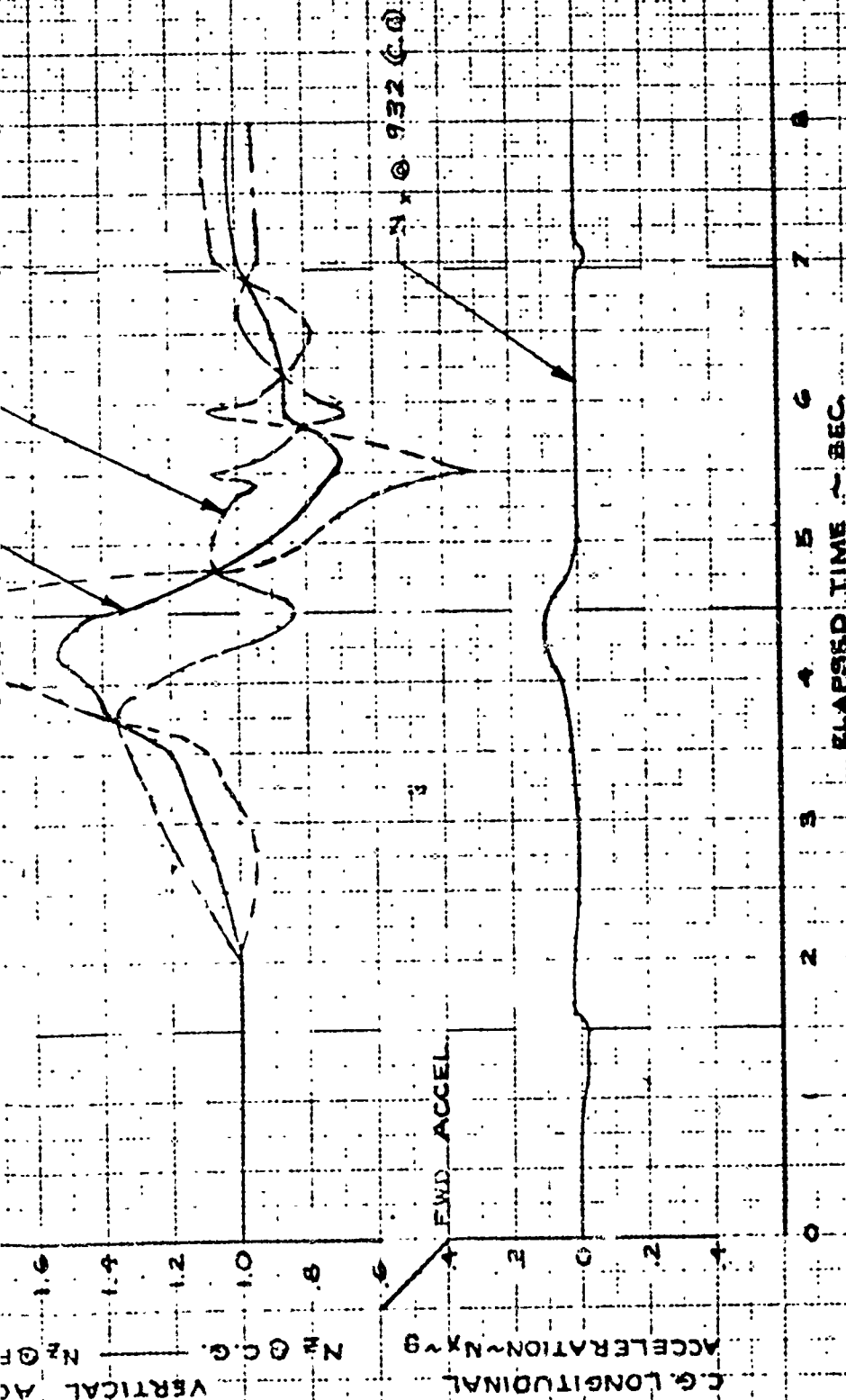


FIGURE F-4C

6008
ADS-105C

6008
ADS 105D

JOB NO ADS 615 SUB CODE 4.21

RAMP LIP

LOAD NO. 1 C.G. POSITION

LOAD NO. 2 C.G. POSITION

LOAD RELEASE

LOAD NO. 2 EXTRACTION CHUTE
MANUAL CUTAWAY

LOAD NO. 1 ACCEL.

LOAD NO. 2 ACCEL.

NOTE: LOAD ACCELERATION CALCULATED
FROM EXTRACTION FORCE
DATA.



LOAD C.G. OF RAMP

PREPARED BY FCW

DATE 7-7-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-26

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF G3-8077

LAC 6008

TEST DATE 7-2-65

FLIGHT-149

DROP NO. 40

SHEET 4 OF 7

CARGO WT. 35360 LBS.-1
34650 LBS.-2

NOTE:

SEE FIGURE 4A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

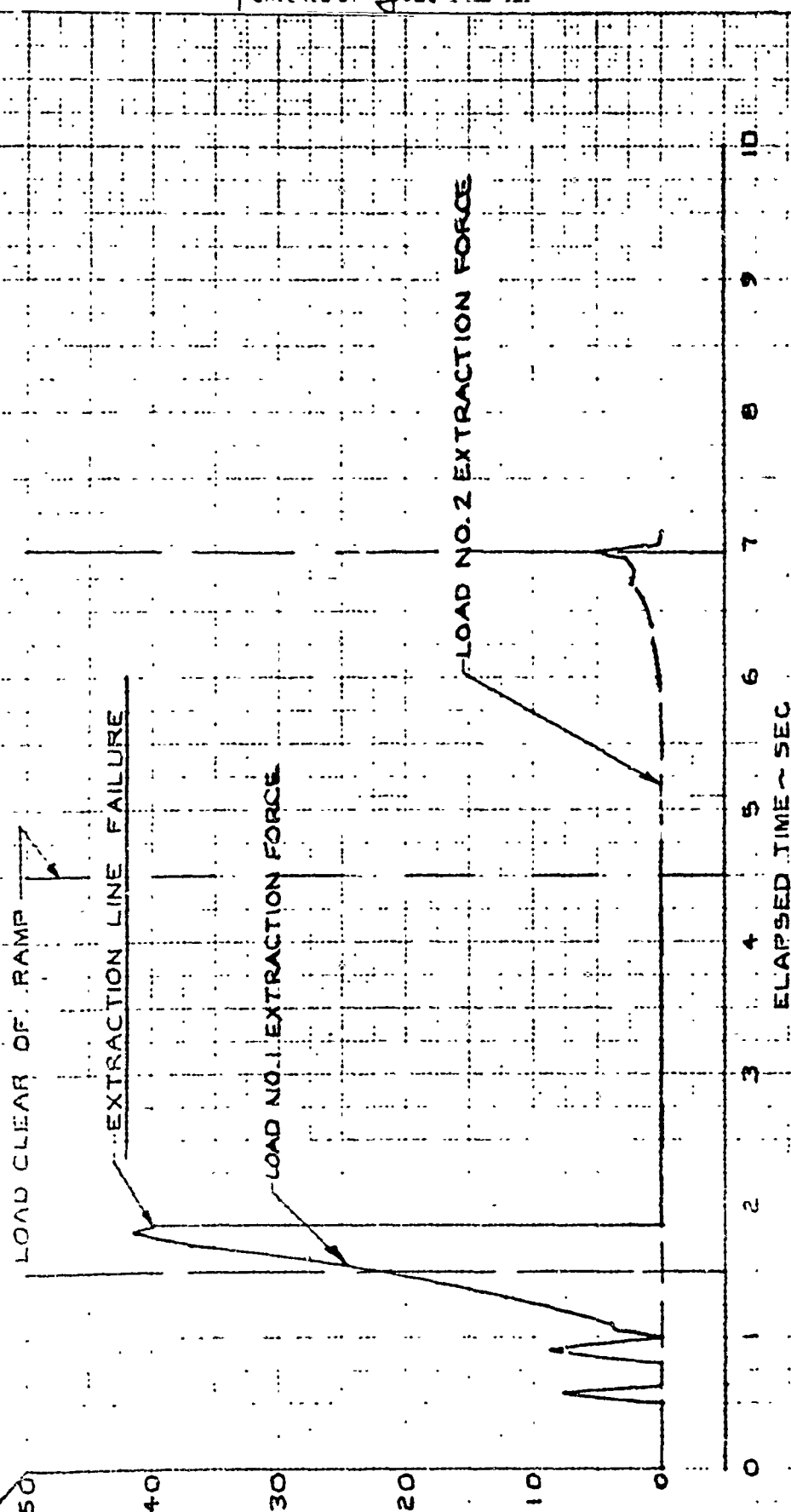


FIGURE F-4D

6008
ADS 1050

6008
ADS-105E

R.H. RAMP ACTUATOR LOAD

L.H. RAMP ACTUATOR LOAD

LOAD RELEASE

L.H. SPIDER ARM LOAD

R.H. SPIDER ARM LOAD

R.H. VERT. LOAD

L.H. VERT. LOAD

SIDE LOAD

RAMP ACTUATOR LOAD

ADS LINK AXIAL LOAD

VERTICAL LOAD

JOB NO. SUB. CODE 4.2.1

TENSION

TENSION

DOWN LOAD

PULL RIGHT

4

2

0

-2

-4

R.H. L.H.
LBS. X 10⁻³

30

20

10

0

R.H. L.H.
LBS. X 10⁻³

15

10

5

0

R.H. L.H.
LBS. X 10⁻³

20

PREPARED BY **TED**

DATE **1-7-66**

TIME **10:00**

LOCKHEED G. E. A COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**

MODEL **C-141A**

PAGE **B-27**

TIME HISTORY OF AERIAL DELIVERY MANGUYER

MODEL **C-141A**

AF 63-8077

LAC 6008

TEST DATE: **1-2-66**

FLIGHT: **149**

DROP NO: **40**

SHEET **5** OF **7**

CARGO WT. **35,360 LBS-1**
34,650 LBS-2

NOTE:
SEE FIGURE F-4A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

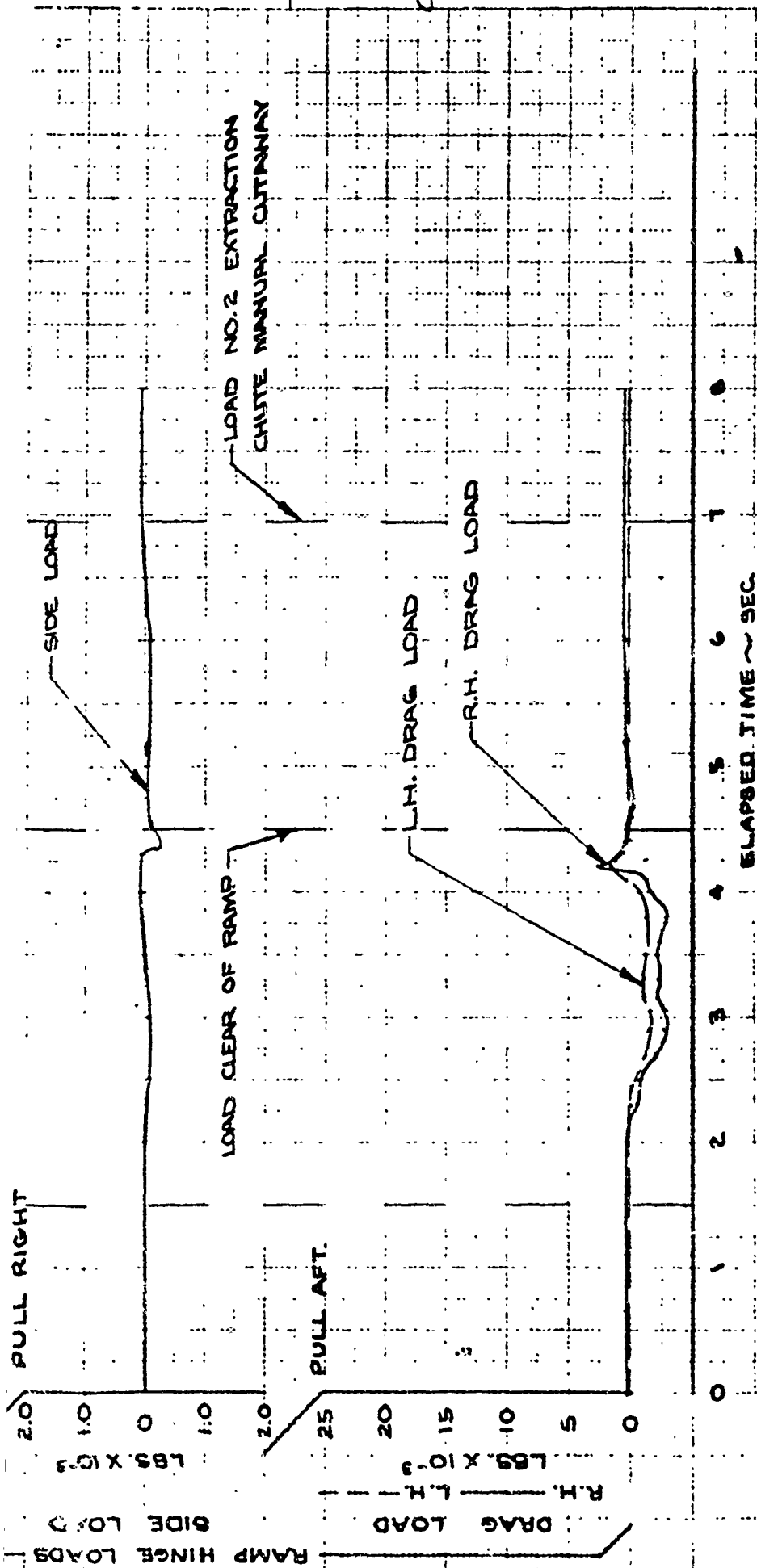
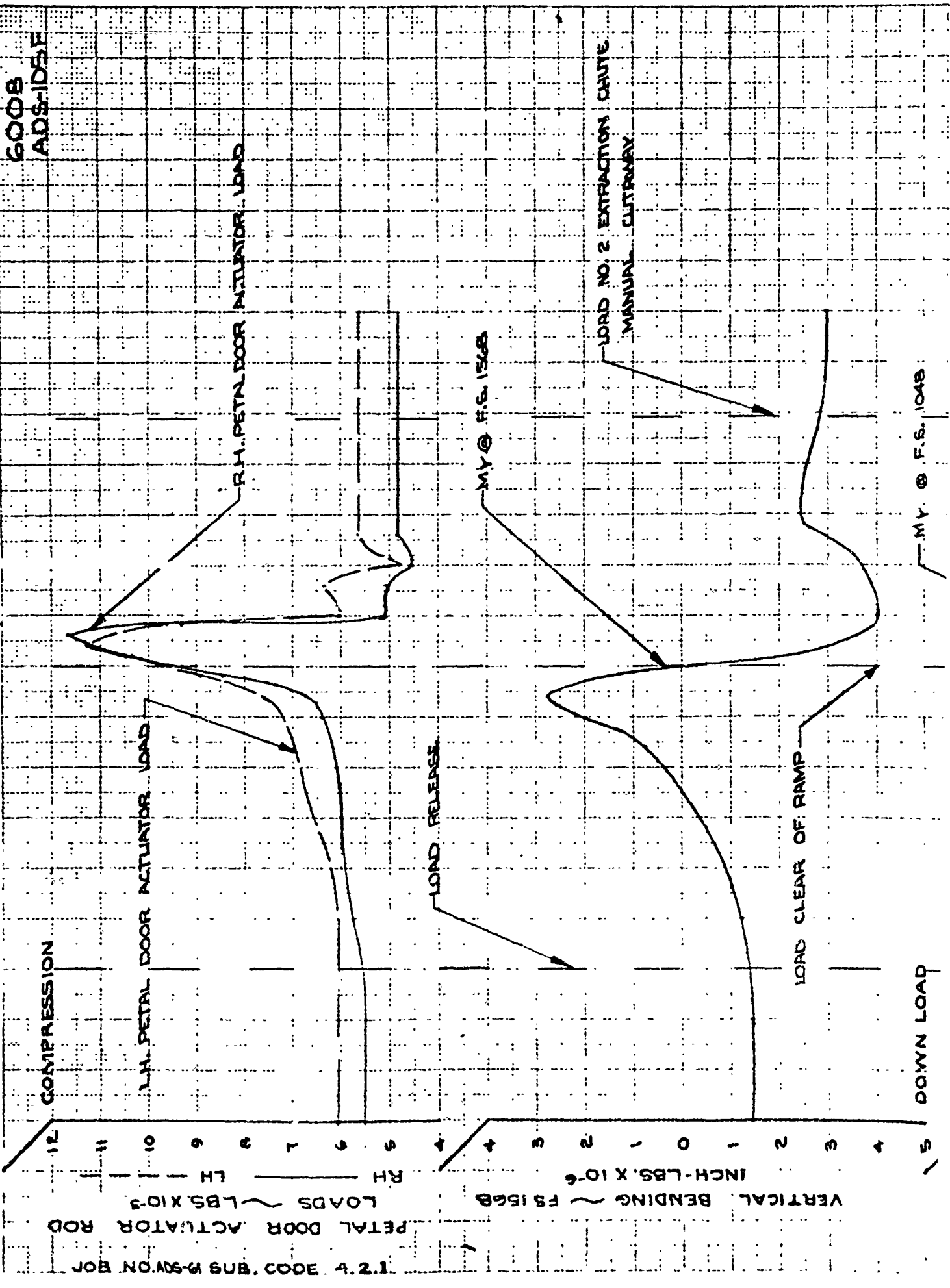


FIGURE F-4E

6008
ADS-105E



TRD
7-7-68
Jup

ER 5473
C-141A
F-28

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG5-8077

LAC 6008

TEST DATE: 7-2-68

FLIGHT-149

DROP NO. 40

SHEET 6 OF 7

CARGO WT. 35,300 LBS - 1
34,650 LBS - 2

NOTE:
SEE FIGURE F-4 SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

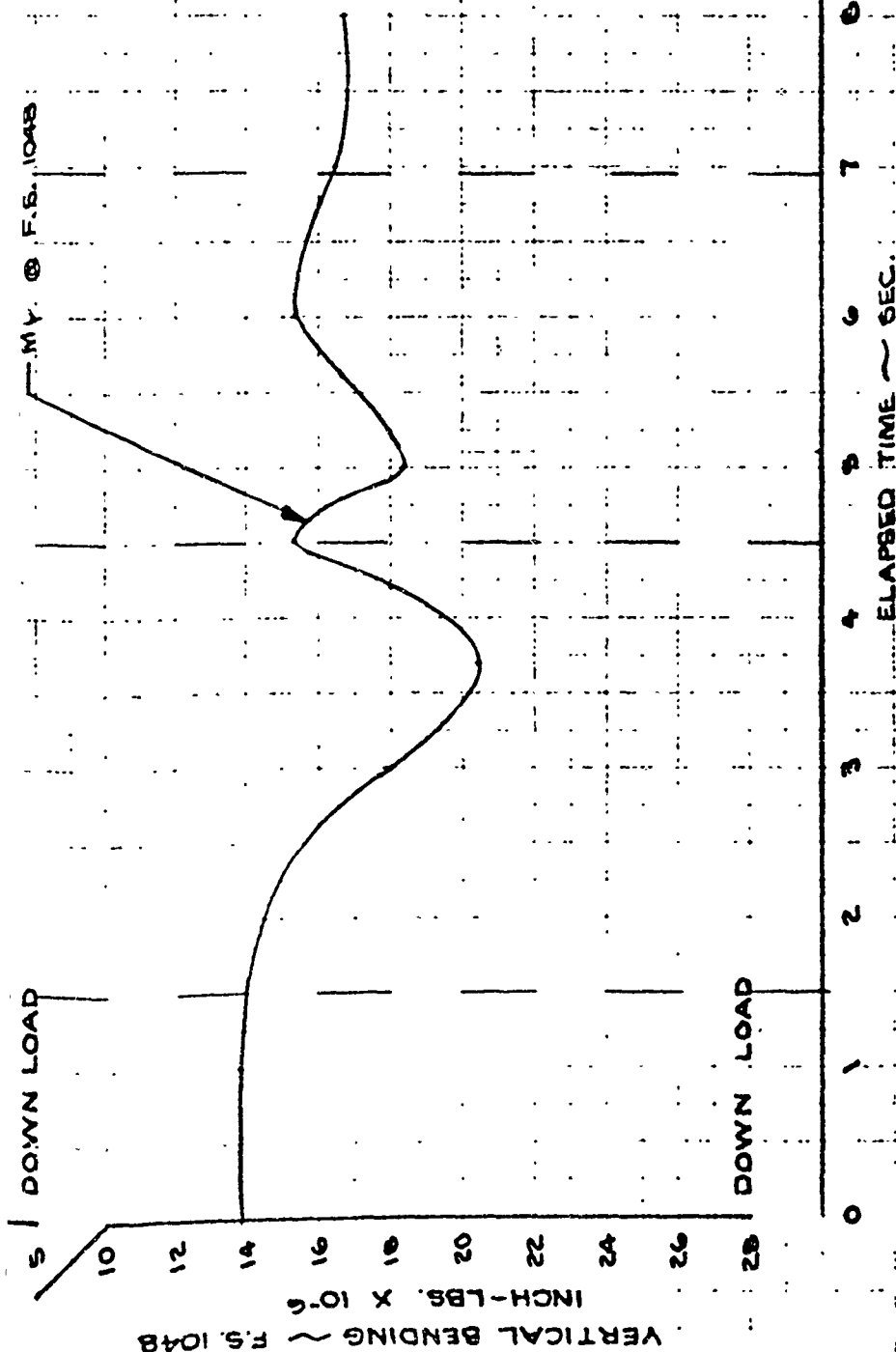
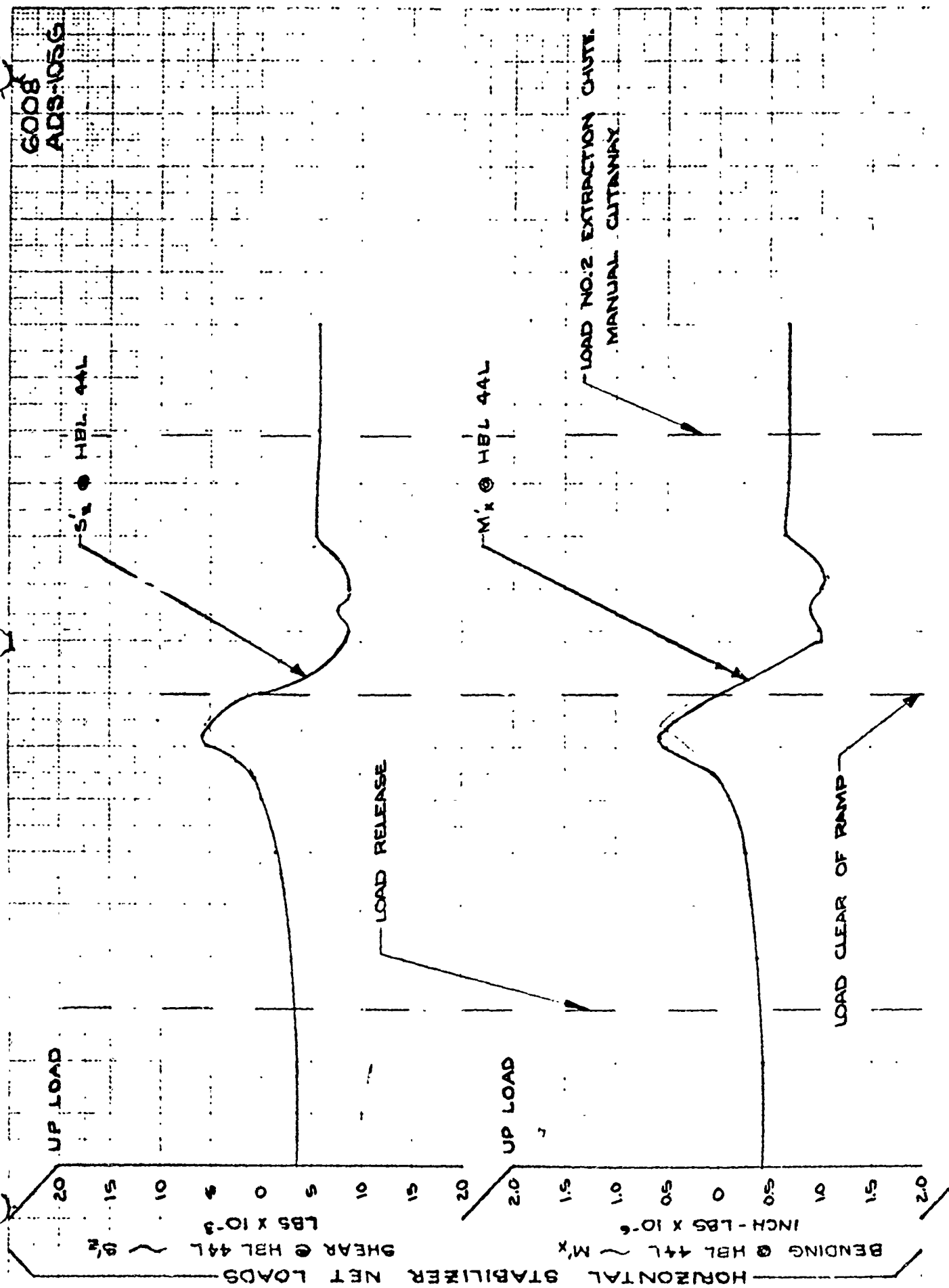


FIGURE F-4-F

6008
ADS-105F



6008
ADS-105G

TED
7-7-68
JWP

ER 5473
C-141A
F-29

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF63-8077 LAC 6008
TEST DATE: 7-2-68
FLIGHT 149 DROP NO. 40

SHEET 1 OF 1

CARGO WT. 35,360 LBS-1
34,650 LBS-2

NOTE:
SEE FIGURE F4A SHEET 1 OF 1
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

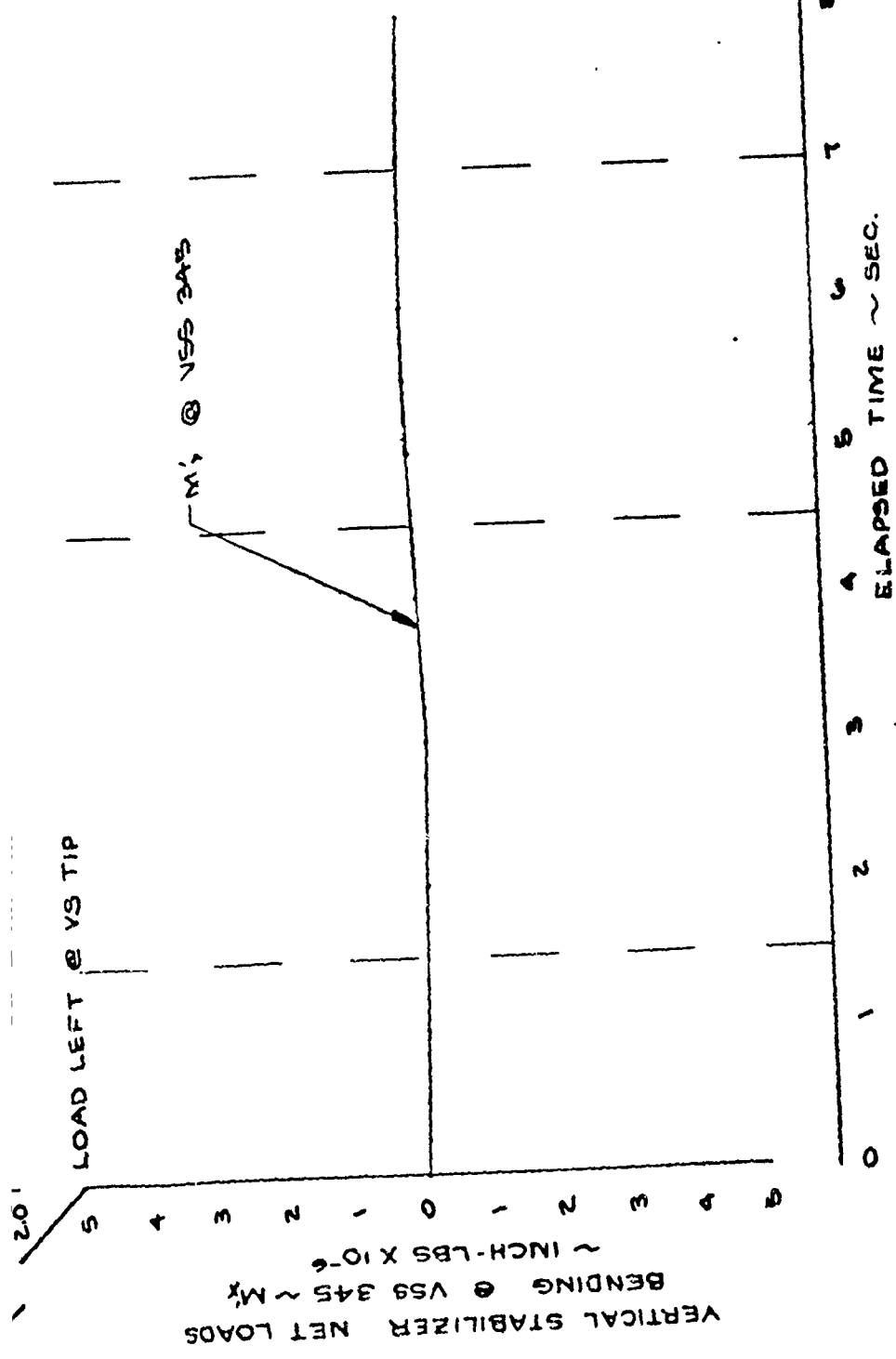
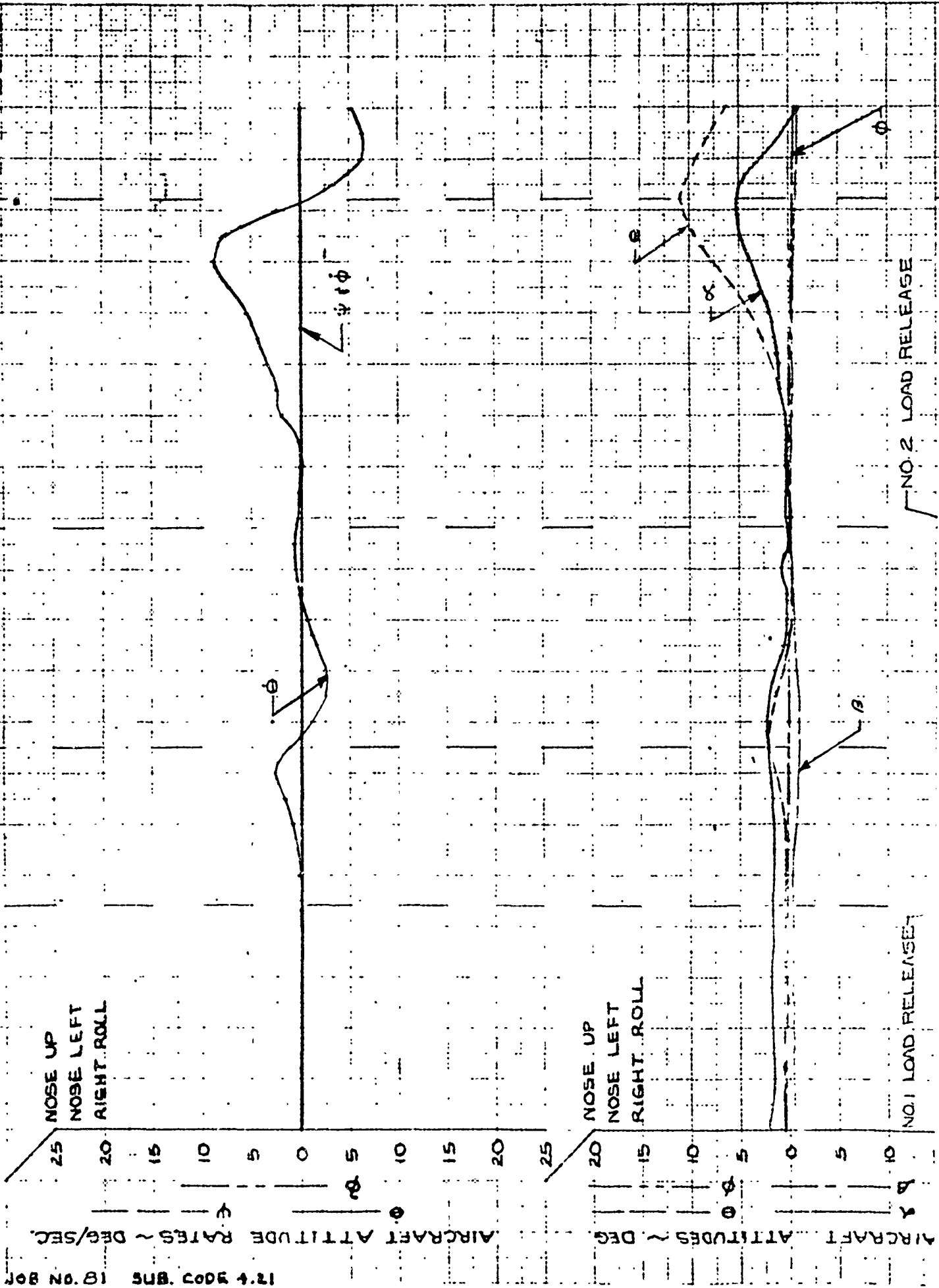


FIGURE F-4G

6008
ADS-105 G

6008
ADS156A



17-4 5003 BNS 18-04 B07

PREPARED BY MBH
 DATE 9-3-65
 CHECKED BY JWP

FIELD OF VIEW COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 PAGE F-30

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 600B

TEST DATE 9-2-65

FLIGHT 175

DROP NO. 4 OR

SHEET 1 OF 13

CARGO WT. 35,390 LBS (LOAD-1)

RUN CONDITIONS (LOAD NO. 1)

1. G.W. ~ 226,300 LBS.
2. C.G. PRIOR TO DROP ~ 33.0% MAC
3. C.G. AFTER DROP ~ 21.5% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.28
7. $\alpha_H \sim 0.65^\circ$ (A/C N.L.)

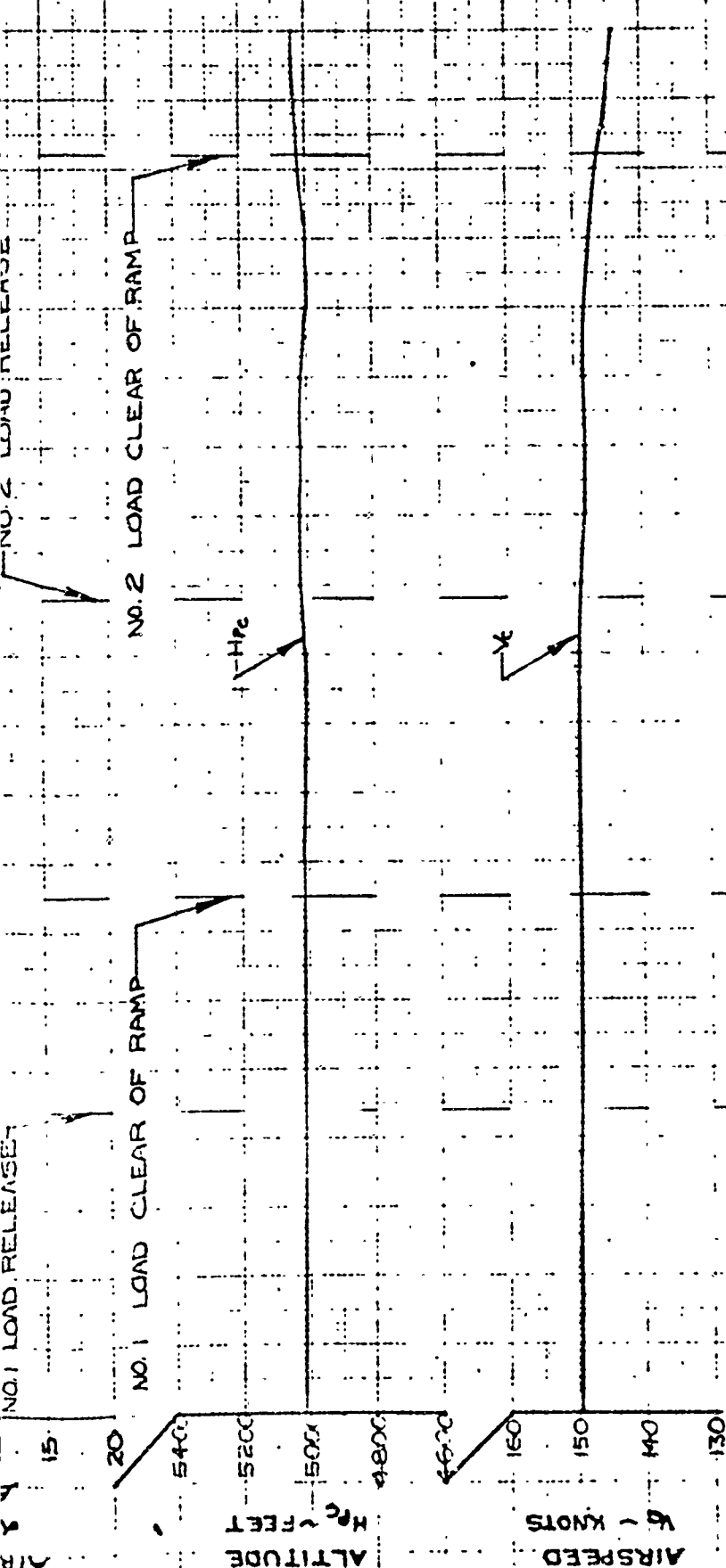
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 336 IN.
3. CARGO C.G. POSITIONS
LONG. ~ F3 ~ 1111
VERT. ~ WL ~ 180

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. ~ 1.3
4. EXTRACTION LINE LENGTH ~ 80 FT

FIGURE F-5A

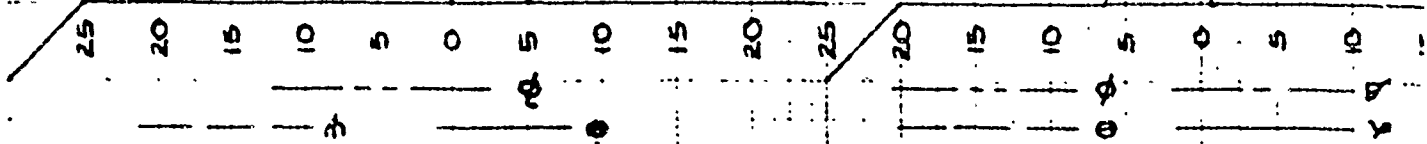


600B

ADS 156A

REVISED 12-17-65
 MBH

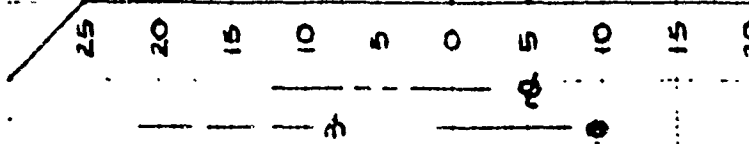
AIRCRAFT ATTITUDES ~ DEG



NOSE UP
NOSE LEFT
RIGHT ROLL

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE RATES ~ DEG/SEC



NOSE UP
NOSE LEFT
RIGHT ROLL

8008 ADS156B

PREPARED BY MBH
DATE 9-3-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE F-31

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFB38077

LAC 600B

TEST DATE 9-2-65

FLIGHT 175

DROP NO. 408

SHEET 2 OF 13

CARGO WT. 35,040 LBS. (LOAD-2)

RUN CONDITIONS (LOAD NO. 2)

1. G.W. ~ 190,910 LBS.
2. C.G. PRIOR TO DROP ~ 21.5% MAC
3. C.G. AFTER DROP ~ 30.6% MAC
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.28 EPR
7. α_H ~ 0.65° (A/C N.W.)

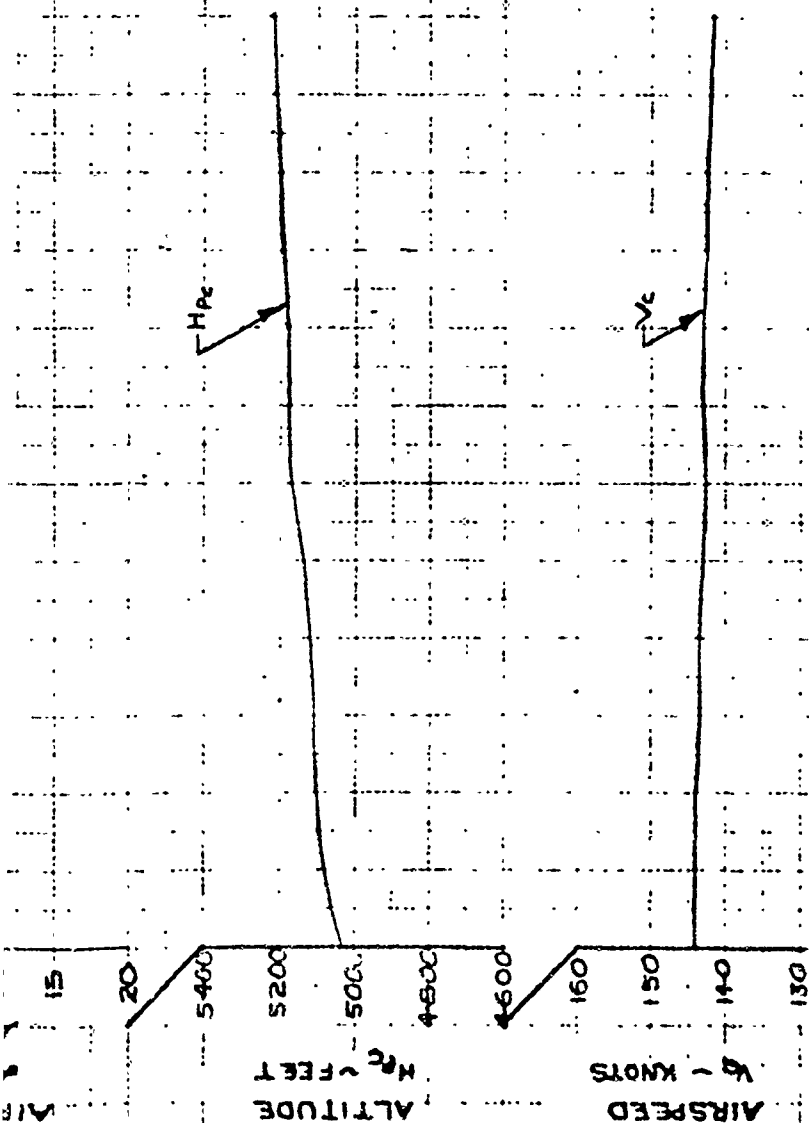
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ 288 IN.
3. CARGO C.G. POSITIONS
LONG. ~ FS ~ 808
VERT. ~ WL ~ 182

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 2
2. CHUTE SIZE ~ 28 FT.
3. RATED CHUTE FORCE/CARGO WT. - 1.3
4. EXTRACTION LINE LENGTH ~ 100 FT.

FIGURE F-5B



600B

ADS-1565

REVISED 12-17-65
MBH

6000
ADS 1560C

RIGHT ROLL
PUSH LEFT
PULL

12.4 3409 RMS
17.0N 008



PREPARED BY JDG

DATE 9-3-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AERIAL DELIVERY SYSTEM

REPORT NO ER 5473

MODEL G-141A

PAGE F-32

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 9-2-65

FLIGHT 17B

DROP NO 40R

SHEET 3 OF 13

CARGO WT ① 35,390 LBS

② 35,040 LBS

NOTE:

SEE FIGURE 5 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

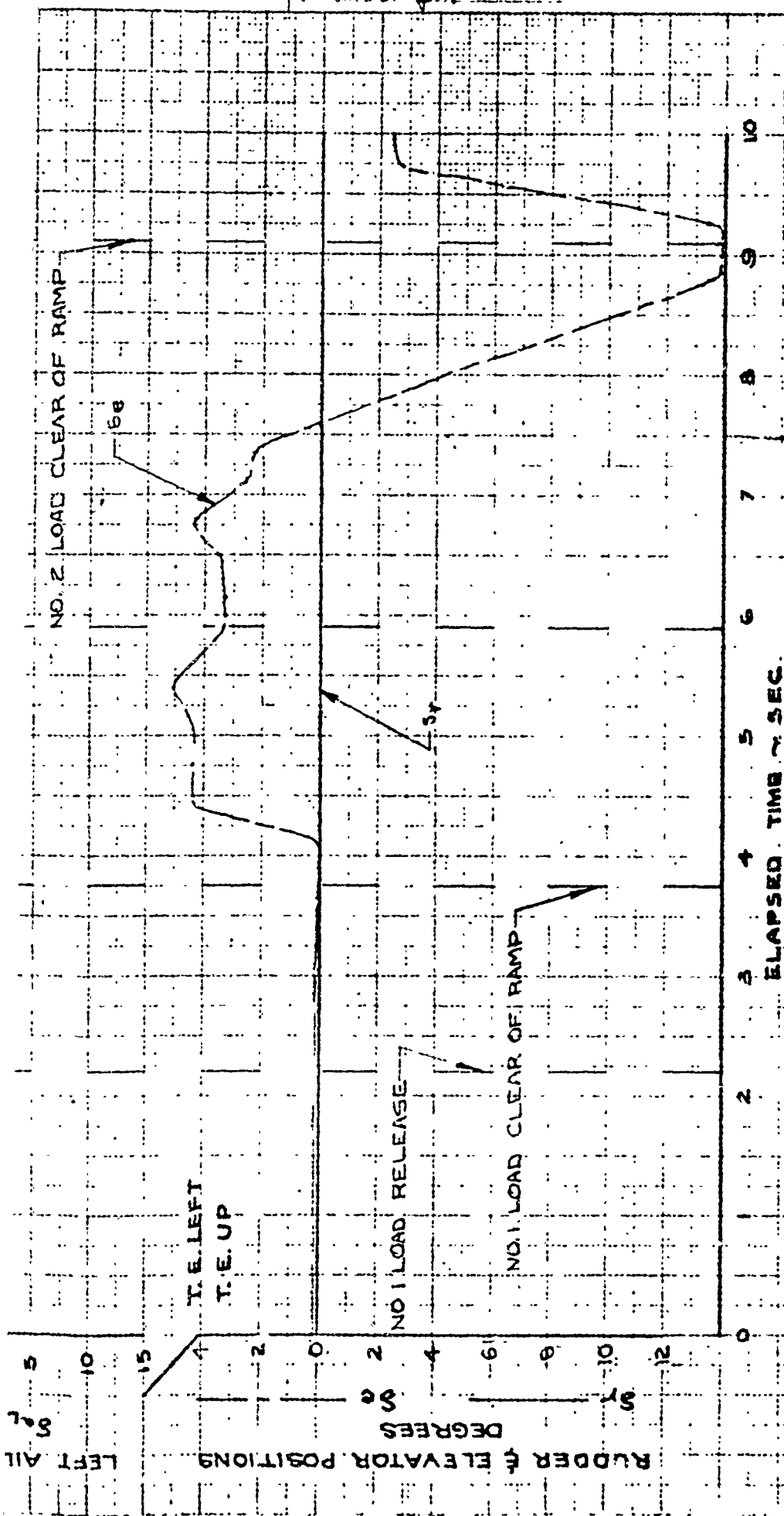


FIGURE F-5C

6008
ADS 15GC

6008
ADS1560



RIGHT ROLL
PUSH LEFT
PULL

70

60

50

40

30

20

10

0

10

20

30

40

T.E. UP

20

15

10

5

0

CONTROL FORCES ~ LBS.

LERON POSITION ~ DEG.

JOB NO. 8

SUP. CODE 4.21

F_a

F_r

F_e

F_{al}

FORMAL ID BY JOG
DATE 9-8-65
JMP

ER 5473
MODEL C-141A
F-33

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63 8077 LAC 6008
TEST DATE 9-2-65
FLIGHT 175 DROP NO 40-R
SHEET 4 OF 13

CARGO WT. ① 35,390 LB.
② 35,040 LB.

NOTE:
SEE FIGURE F-5D SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

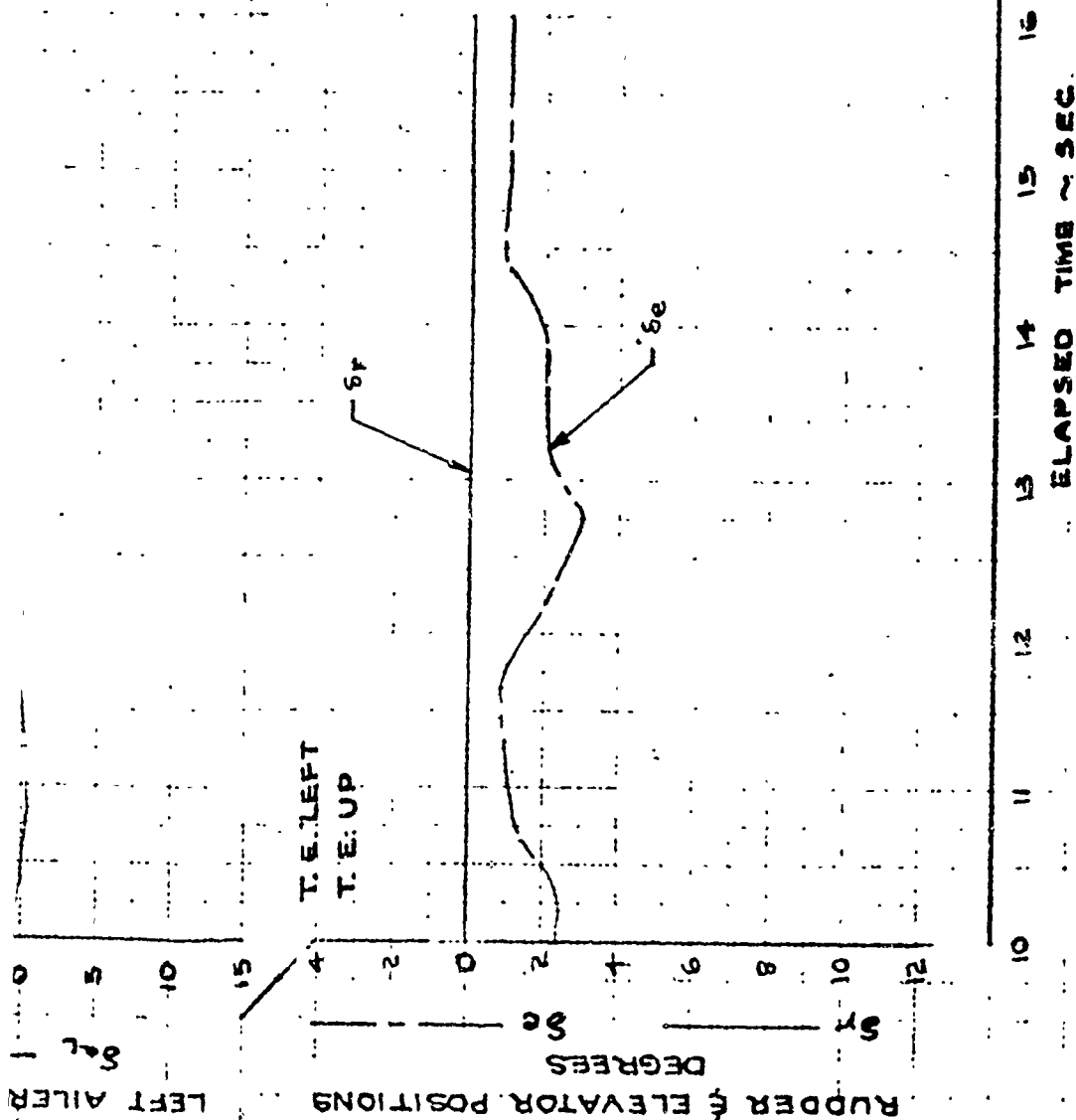
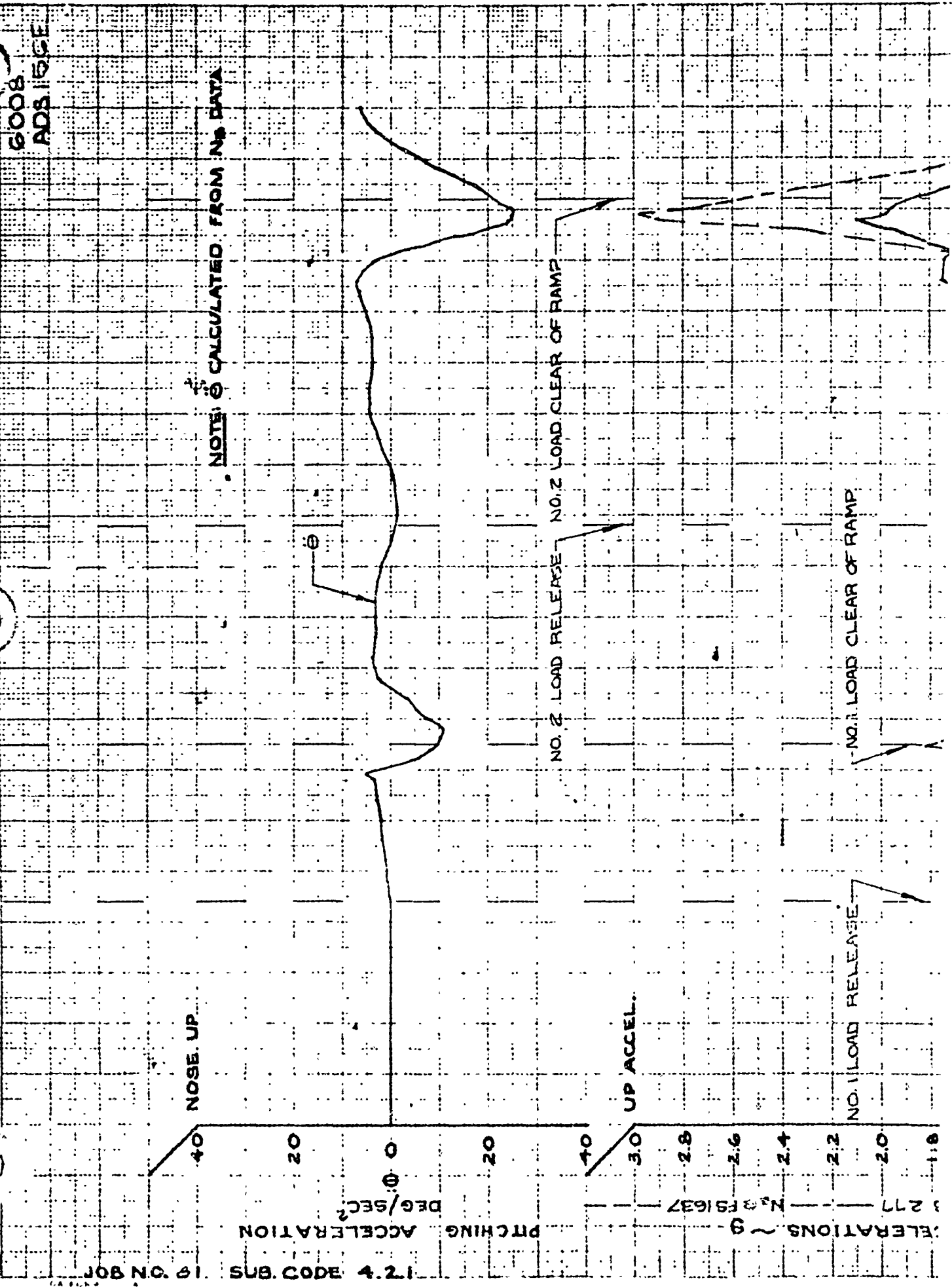


FIGURE F-5D

6008
ADS 156D



PREPARED BY DTM

DATE 9-3-65

BY JUF

LOCKHEED (C) A COMPANY

AIRCRAFT MODEL: C-141A

REPORT NO ER 5473

MODEL C-141A

PAGE 34

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-2077

LAC 6008

TEST DATE: 9-2-65

FLIGHT 175

DROP NO. 40R

SHEET 5 OF 3

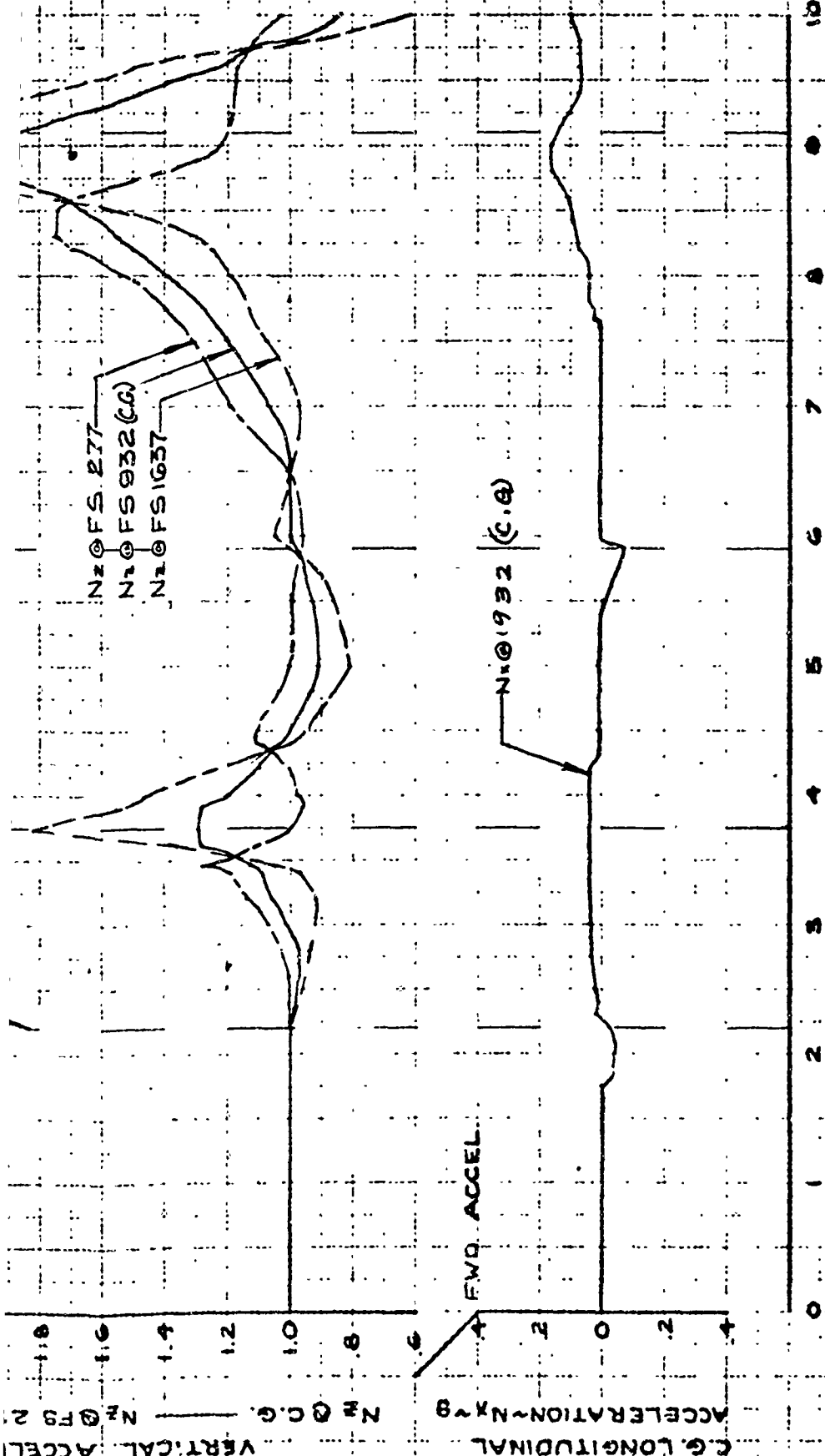
CARGO WTS ① 35,390
② 35,040

NOTE:
SEE FIGURES SHEET 1 OF 3
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE F-5 E

6008
ADS 15GE





JOB NO. 81 SUB. CODE 4.2.1

PITCHING ACCELERATION

DEG/SEC²

NOSE UP

UP ACCEL.

ACCELERATIONS ~ 9

N 0.151637

S 2.71

6008
AD8156F

NOTE: θ CALCULATED FROM N_B DATA



DTM
DATE 8-3-65
JUP

ER 5473
C-141A
F-35

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A
AFG3-8077 LAC 6008
TEST DATE: 9-2-65
FLIGHT 173 DROP NO. 40R

SHEET 6 OF 13

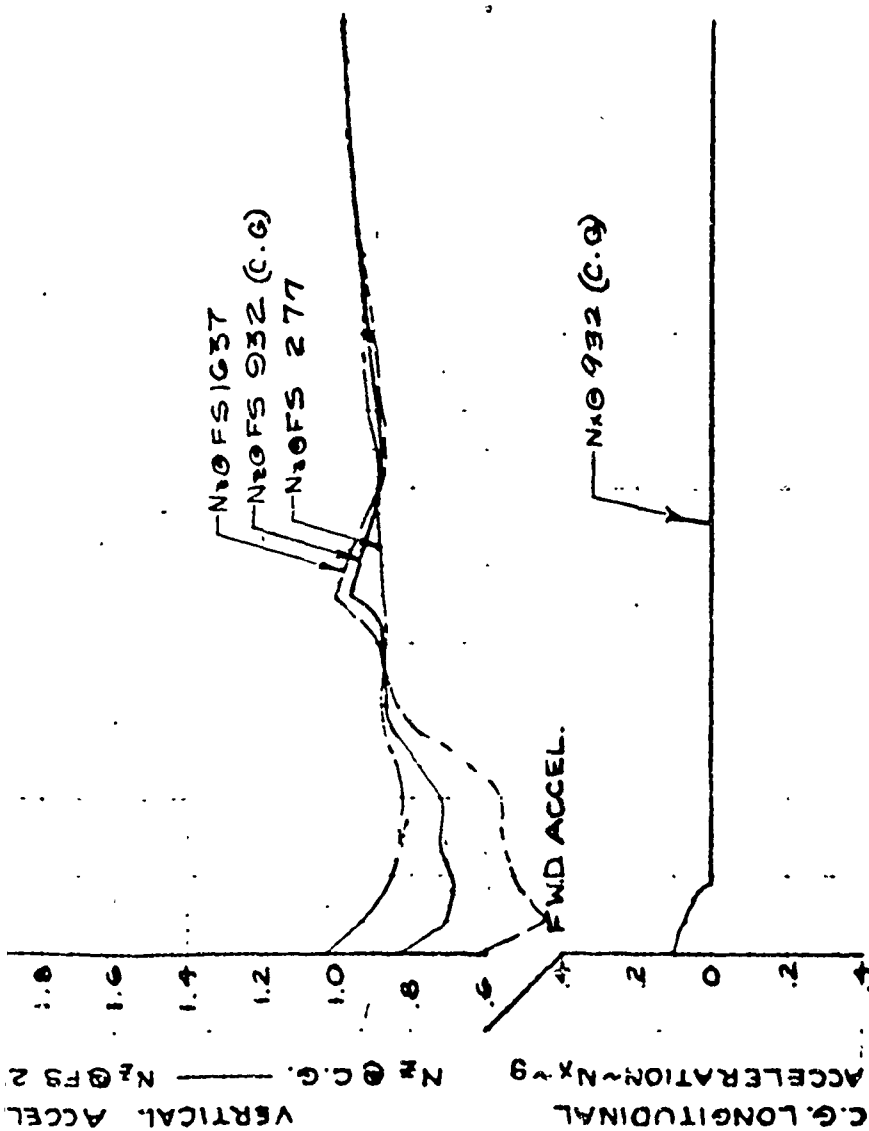
CARGO WT. ① 35,390 LBS
② 35,040 LBS

NOTE:
SEE FIGURE 5 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

20
19
18
17
16
15
14
13
12
11
10
ELAPSED TIME ~ SEC.

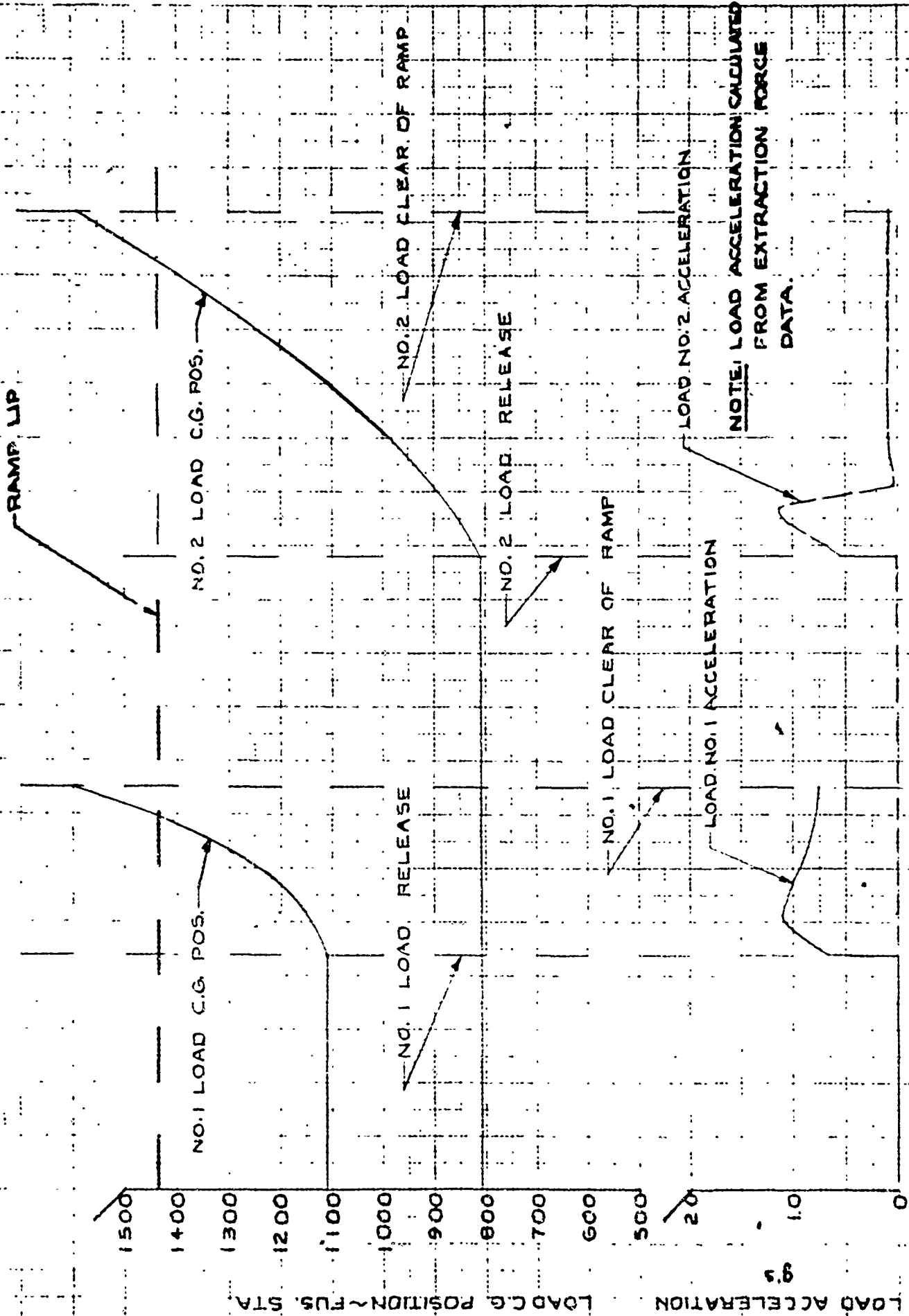
FIGURE F-5F

6008
ADS 15GF





6008
ADS-156G



PREPARED BY JDG
DATE 9-3-65
CHECKED BY jwp

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE 36

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 9-2-65

FLIGHT 175

DROP NO. 40-R

SHEET 7 OF 13

CARGO WT. @ 35390 LBS
@ 35040 LBS

NOTE:

SEE FIGURE 5, SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

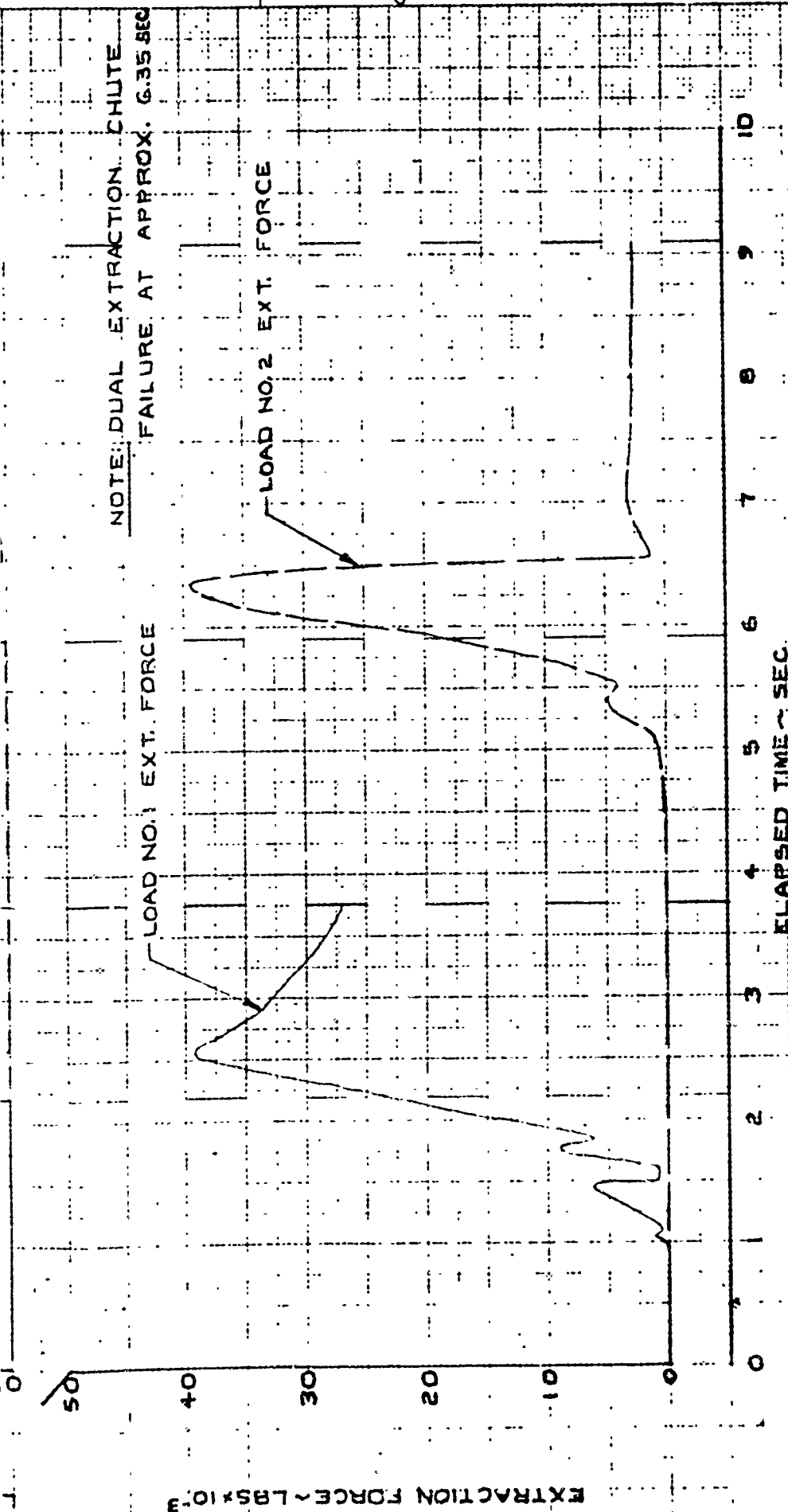
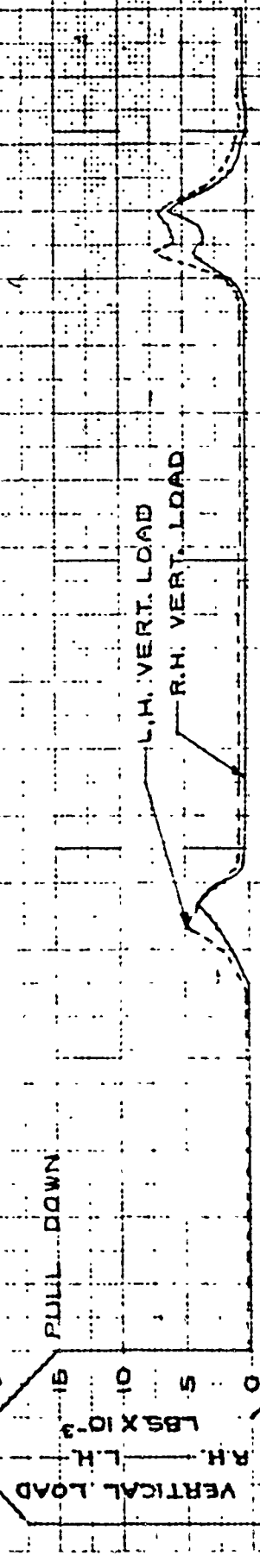
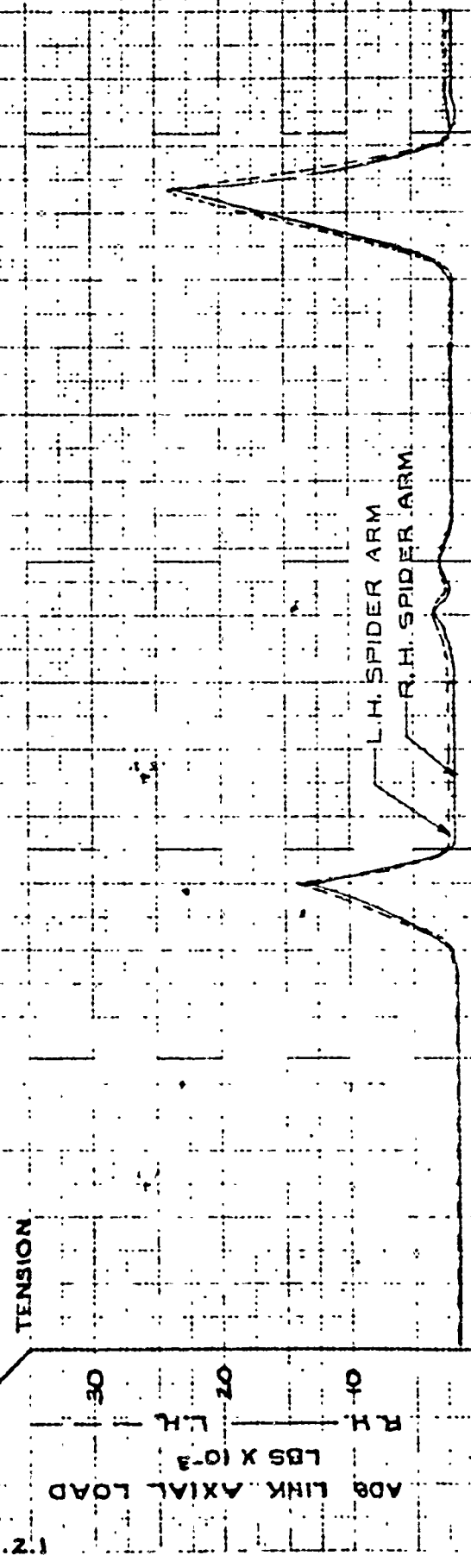
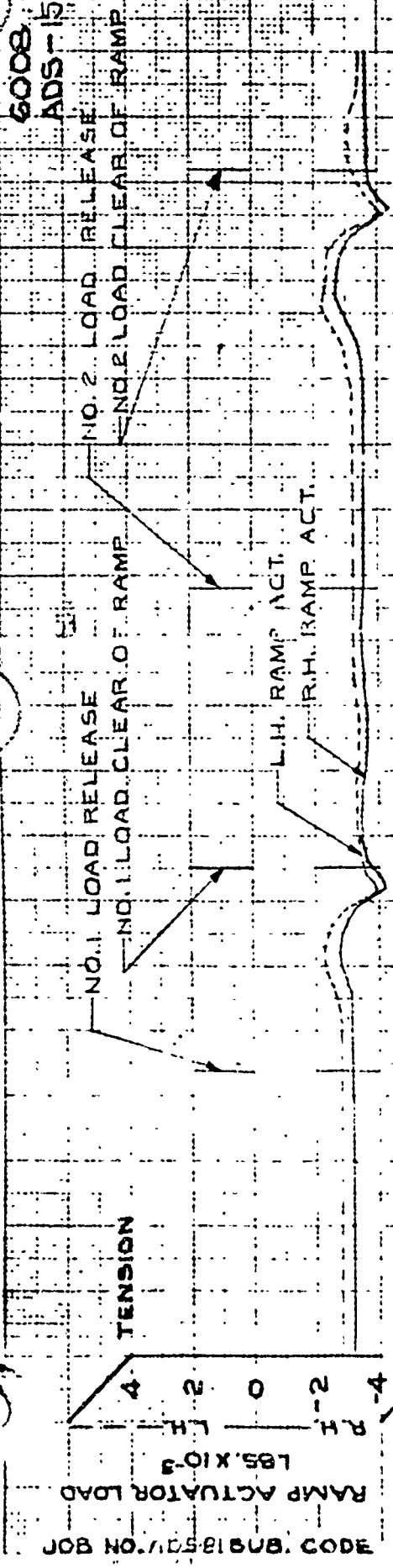


FIGURE F-5G

6008
ADS-156 G

6008
ADS-156H



JOB NO. 105218UB CODE 4.2.1

ADS

PREPARED BY
DATE
THE REPORT

ADVANCED GYROSCOPE COMPANY
1000 W. 10TH AVE. S.W. ALBUQUERQUE, N.M. 87102

REPORT NO. ER 5473
MODEL C-141A
PAGE 1

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 9-2-65

FLIGHT 175

DROP NO. 40-R

SHEET 8 OF 13

CARGO WT. ① 35390 LBS.

② 35040 LBS.

NOTE:
SEE FIGURE F-5A SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

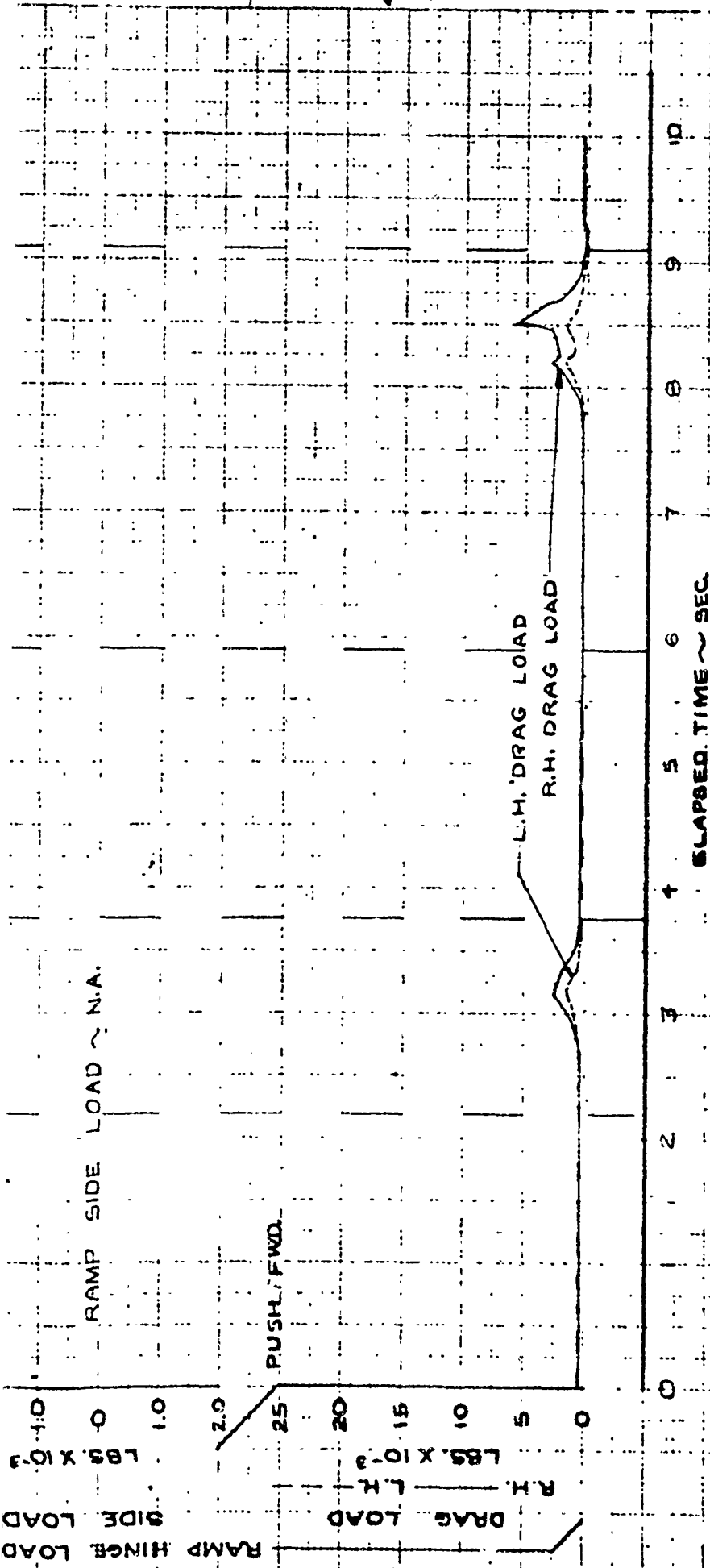
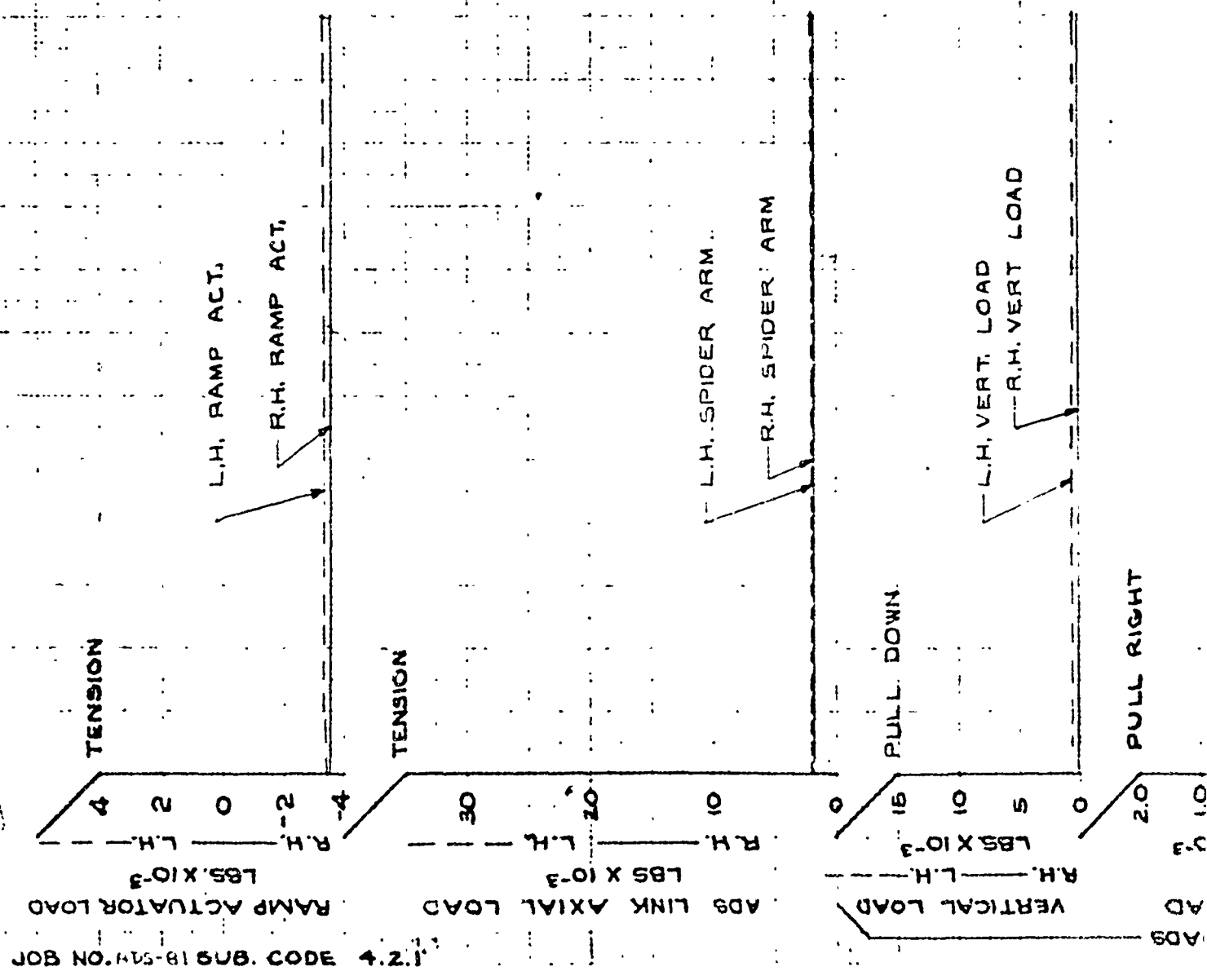


FIGURE F-5H

6008
ADB-156H

008
ADS-156 I



DATE *SEP*

ER 5473
C-141A
F-38

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008
TEST DATE: 9-2-65
FLIGHT 175... DROP NO 40-B

SHEET 9 OF 13

CARGO WT. @ 35390 LBS.
@ 35040 LBS.

NOTE:
SEE FIGURE F-5B SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

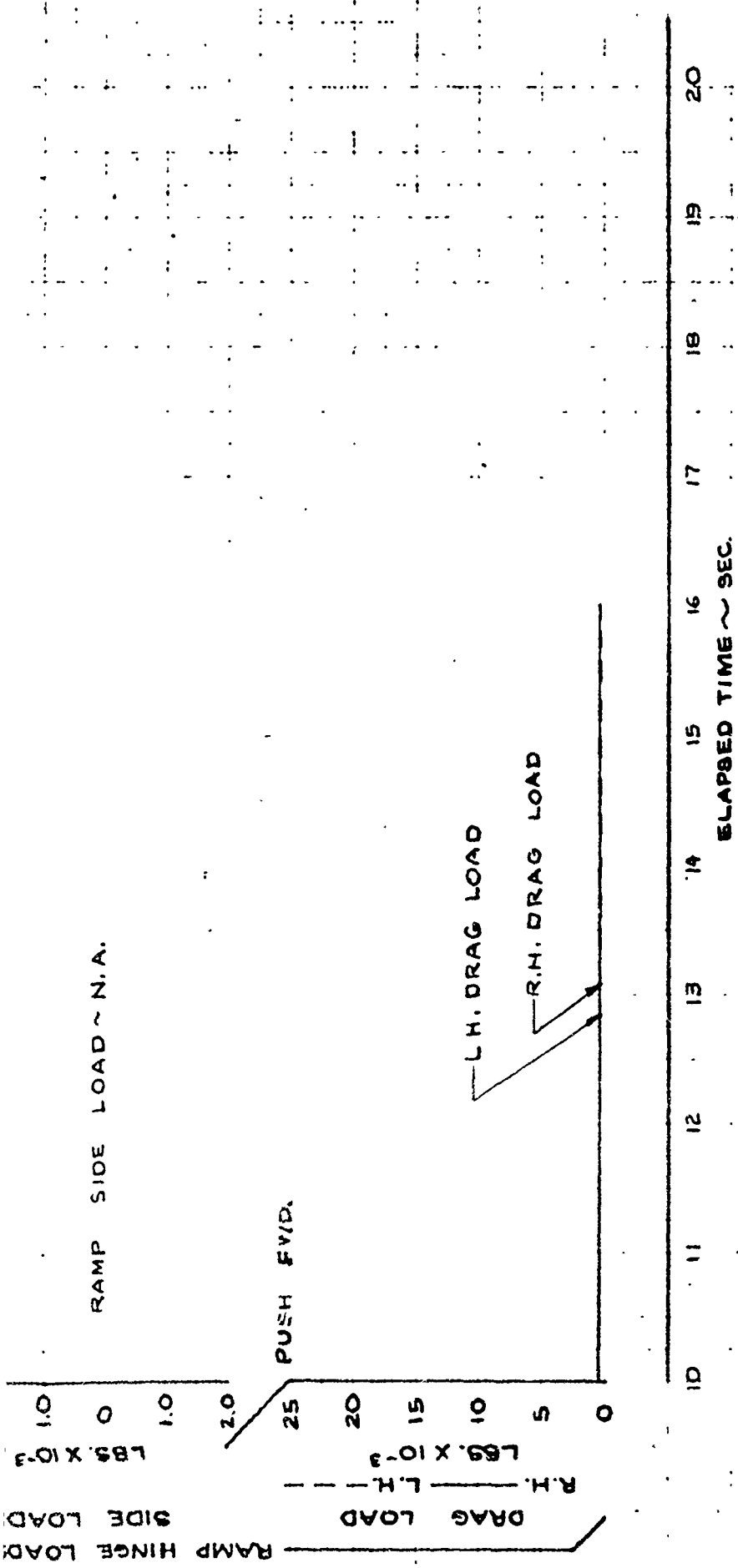


FIGURE F-5 I

6008
ADS-156 I.



JOB NO. 61 SUB. CODE 4.2.1
PETAL DOOR ACTUATOR ROD
LOADS ~ LBS. X 10⁻³
RH ——— LH ———
0 1 2 3 4 5 6 7 8 9 10

COMPRESSION

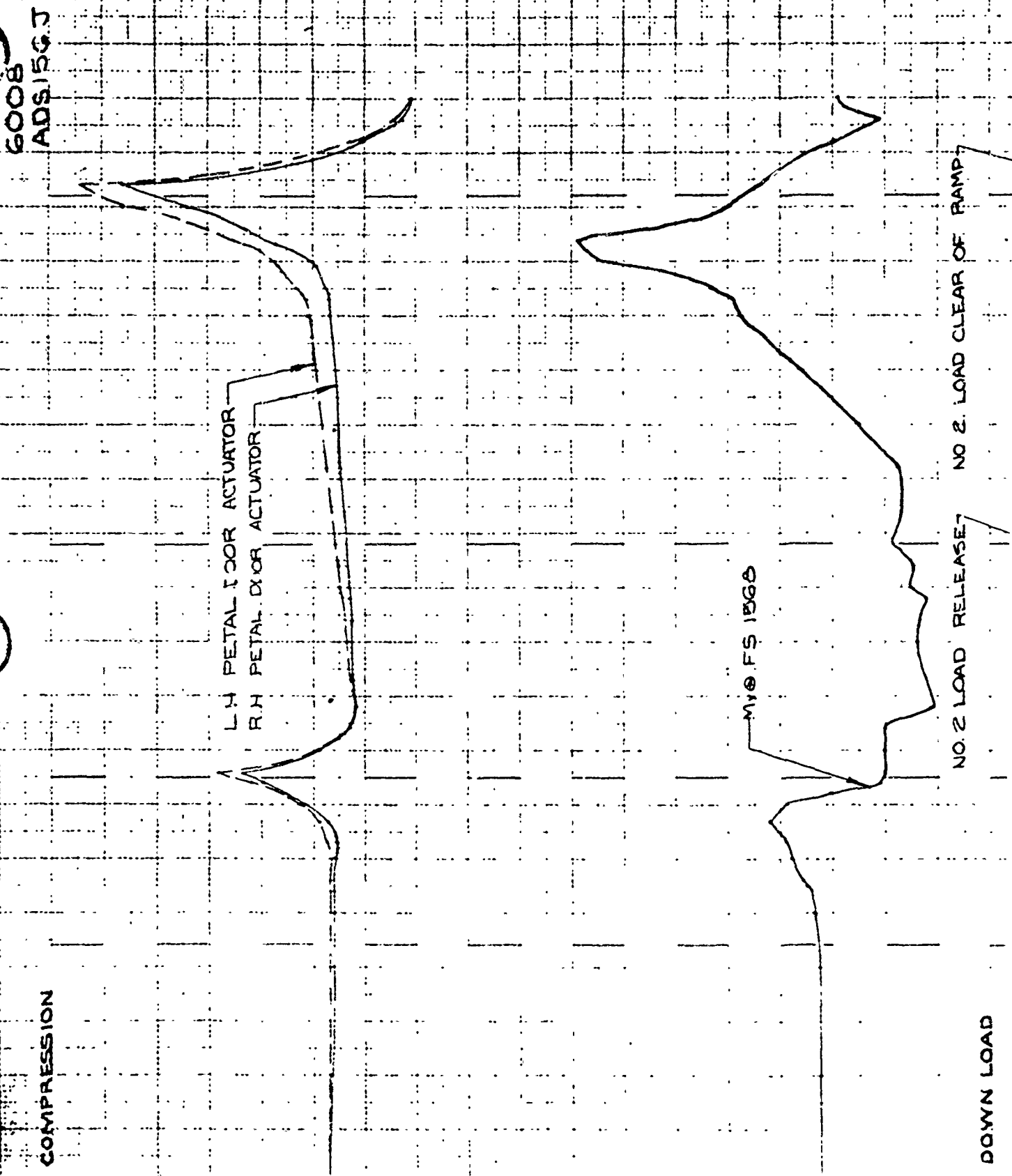
LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR

VERTICAL BENDING ~ FS 1568
INCH-LBS. X 10⁻⁶

M16 FS 1568

NO 2 LOAD RELEASE
NO 2 LOAD CLEAR OF RAMP

DOWN LOAD



PREPARED BY DTM
DATE 9-3-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE F-39

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 8-2-65

FLIGHT 175

DROP NO 408

SHEET 10 OF 13

CARGO WT. ① 35,390 LBS
② 35,040 LBS

NOTE

SEE FIGURE 5 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

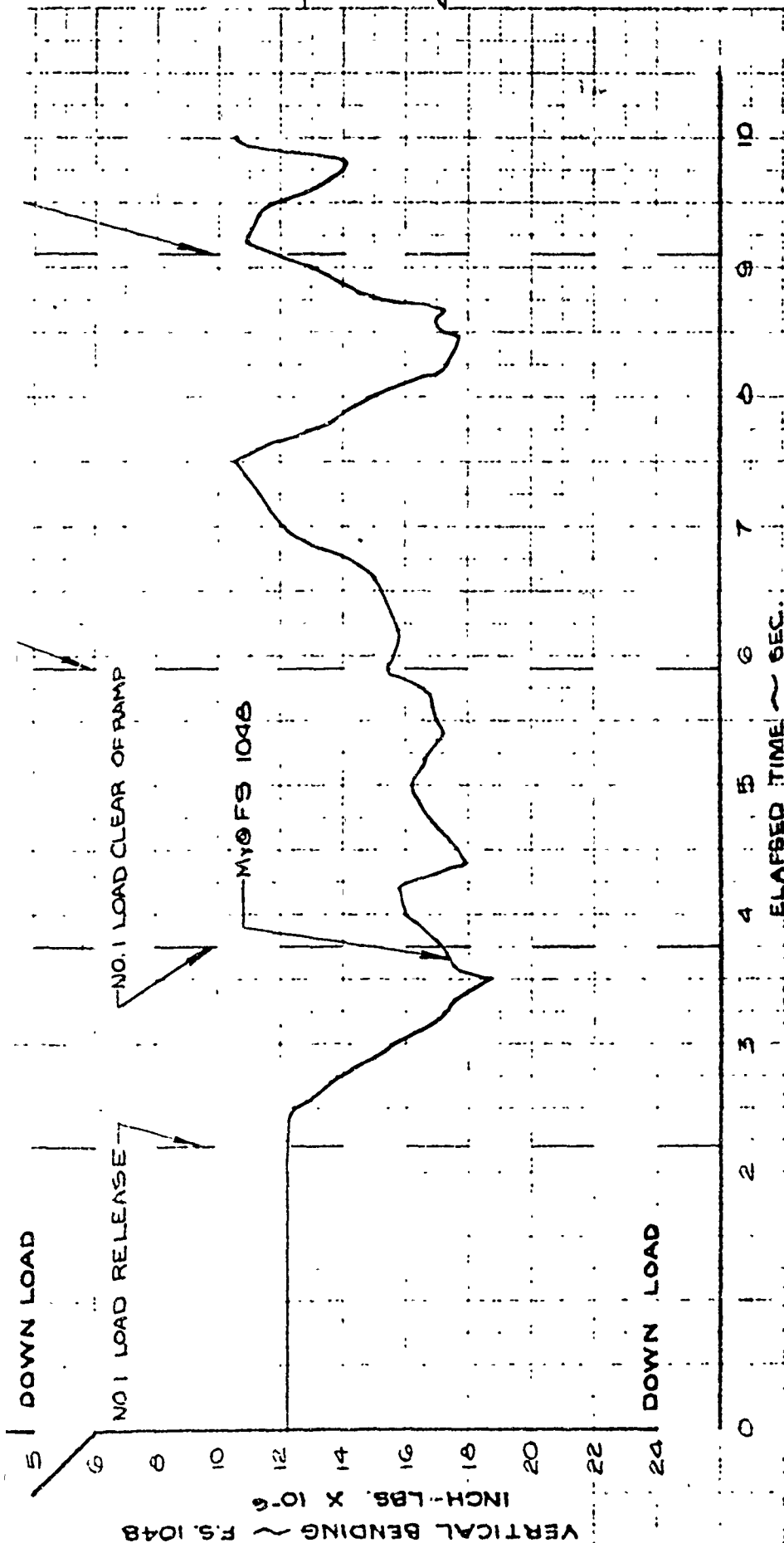


FIGURE F-5J

6008
AD5156J



COMPRESSION

HH PETAL DOOR ACTUATOR

PLH PETAL DOOR ACTUATOR

WFO 51528

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS.X10⁻³

JOB NO. 81 SUB. CODE 4.2.1

VERTICAL BENDING ~ FS 156B
INCH-LBS. X 10⁻⁶



DTM
9-3-65
JMP

RECEIVED

ER 5473
C-141A
F-40

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 9-2-65

FLIGHT 175

DROP NO. 408

SHEET 11 OF 13

CARGO WT. ①35,390 LBS
②35,040 LBS

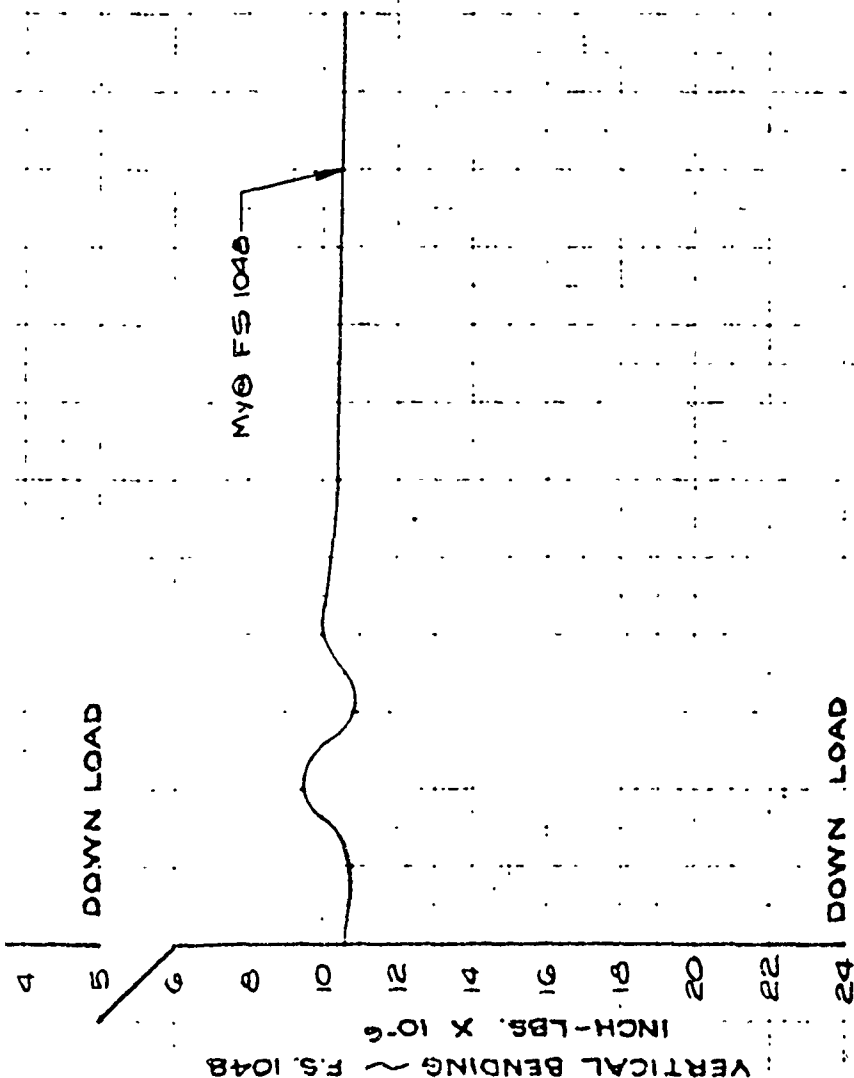
NOTE

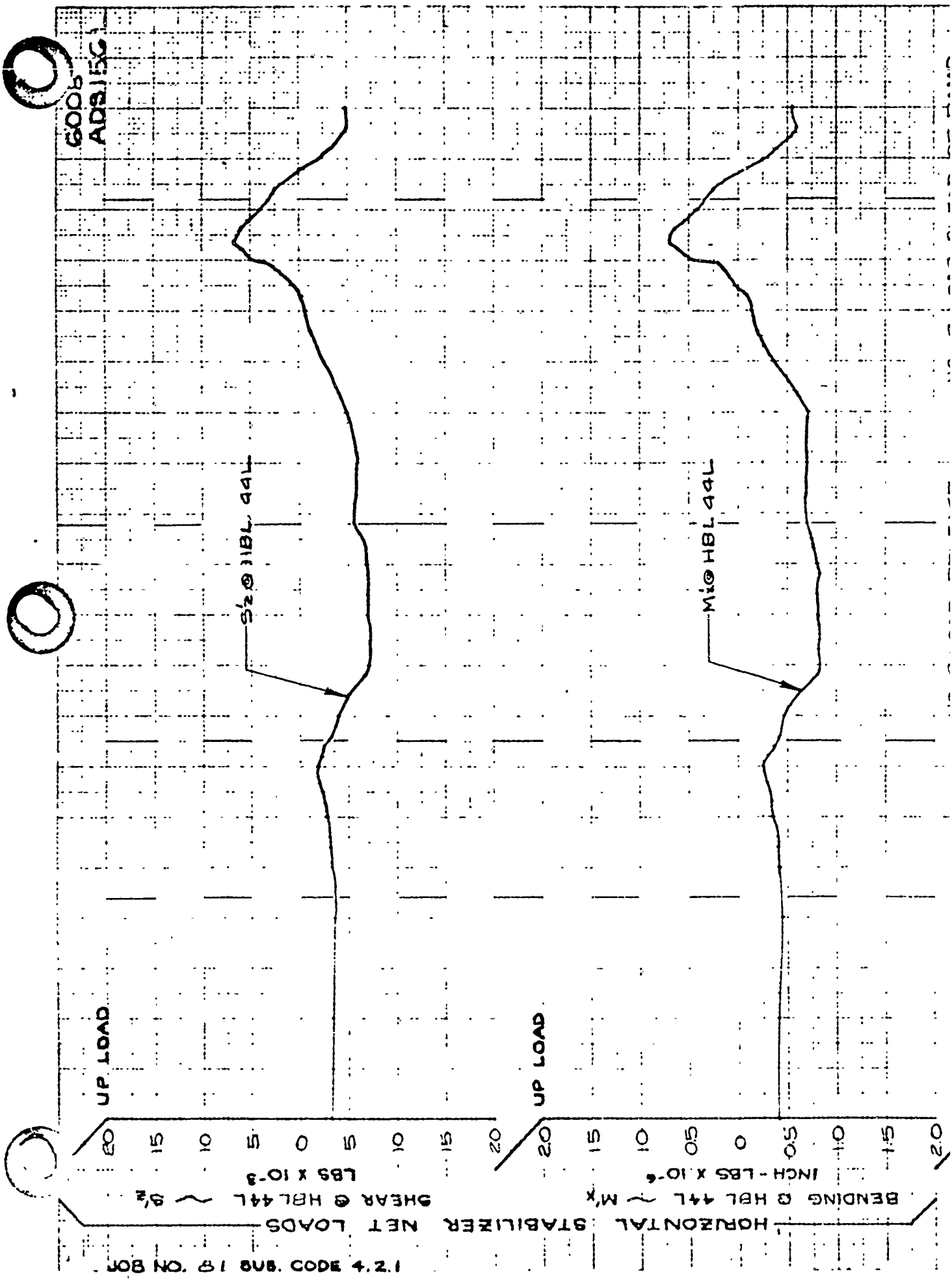
SEE FIGURE F-5B SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE F-5K

6008
AD5.156 K





PREPARED BY DTM
DATE 9-3-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-41

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF68-8077

LAC 6008

TEST DATE: 9-2-65

FLIGHT 175

DROP NO. 408

SHEET 12 OF 13

CARGO WT. ① 35,390 LBS.
② 35,040 LBS.

NOTE:
SEE FIGURE 5, SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE F-5L

6008
ADS15CL

VERTICAL STABILIZER NET LOADS
BENDING @ V59 345 ~ Mx
~ INCH-LBS X 10⁻⁶

Mx @ V55 345

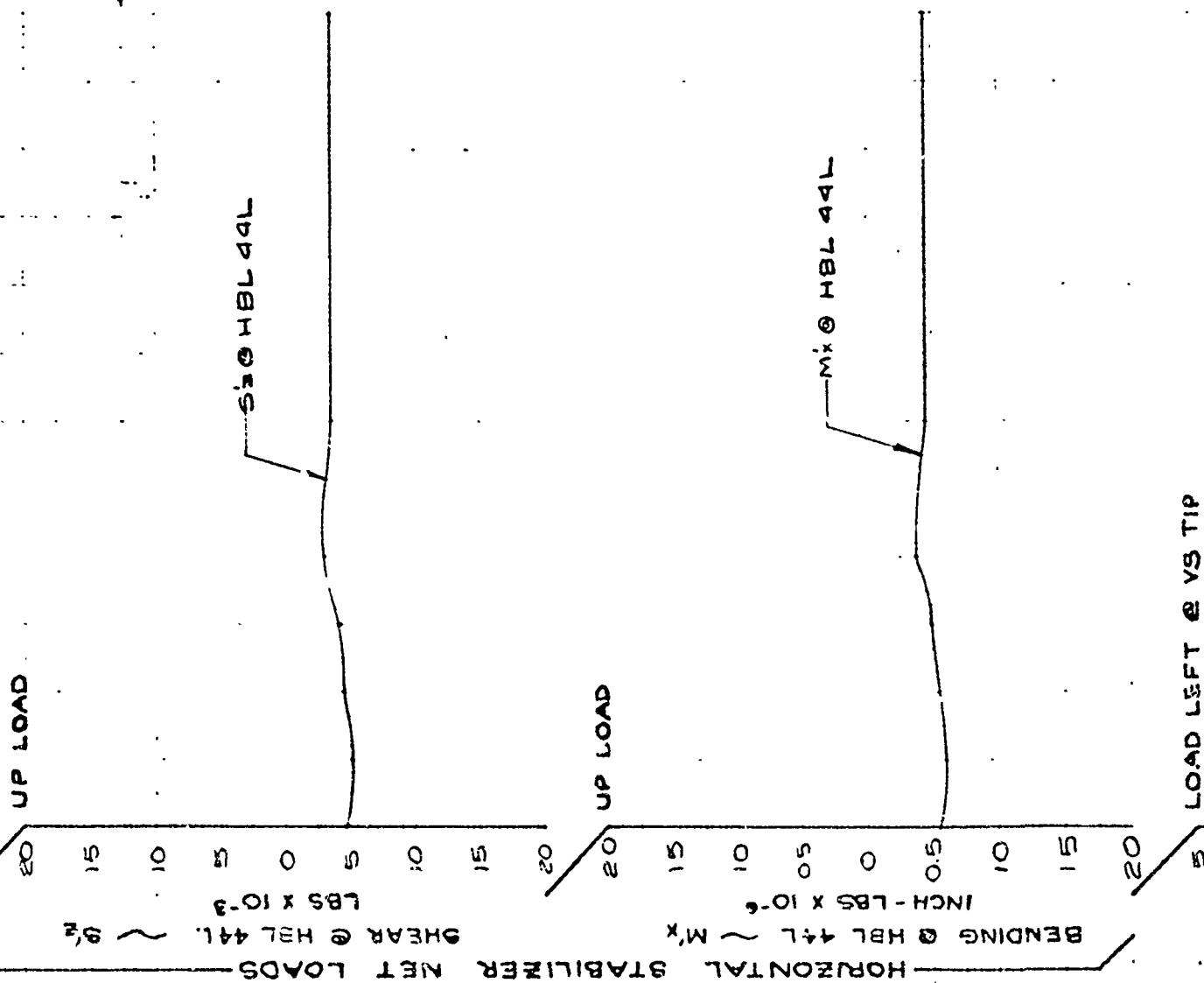
NO. 2 LOAD CLEAR OF RAMP

NO. 2 LOAD RELEASE

NO. 1 LOAD CLEAR OF RAMP

NO. 1 LOAD RELEASE

LOAD LEFT @ V3 TIP



6008
ADS 15GM

DTM
9-3-65
JW

ER 5473
C-141A
F-42

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 9-2-65

FLIGHT 175

DROP NO. 40R

SHEET 13 OF 13

CARGO WT. ① 35,390 LBS.
② 35,040 LBS.

NOTE:

SEE FIGURE 5 SHEET 1 OF 13
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE F-5M

6008
ADS15GM

Mk @ VSS 345

VERTICAL STABILIZER NET LOADS
BENDING @ VSS 345 ~ MK
~ INCH-LBS X 10⁻⁶

6008
ADS 106A

NO. 1 LOAD RELEASE
NO. 1 LOAD CLEAR OF RAMP
NO. 2 LOAD RELEASE
NO. 2 LOAD CLEAR OF RAMP

ψ & ϕ

θ

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDE RATES ~ DEG/SEC.

JOB NO. 10062SUB. CODE 4/21

NOSE UP
NOSE LEFT
RIGHT ROLL

AIRCRAFT ATTITUDES ~ DEG.

θ

ϕ

ϕ

PREPARED BY FLW

DATE 7-8-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIR RAY CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE F-43

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF838077

LAC 6008

TEST DATE 7-7-65

FLIGHT NO. 150

DROP NO. 41-142

SHEET 1 OF 14

CARGO WT. 9750 LBS.-1

10130 LBS.-2

RUN CONDITIONS

1. G.W. ~ 196800 LBS. 186050 LBS.
2. C.G. PRIOR TO DROP ~ 33.5% MAC 29.5% MAC
3. C.G. AFTER DROP ~ 29.5% MAC 27.1% MAC
4. FLAPS ~ 63%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. α_H ~ .55° (A/C N.D.)

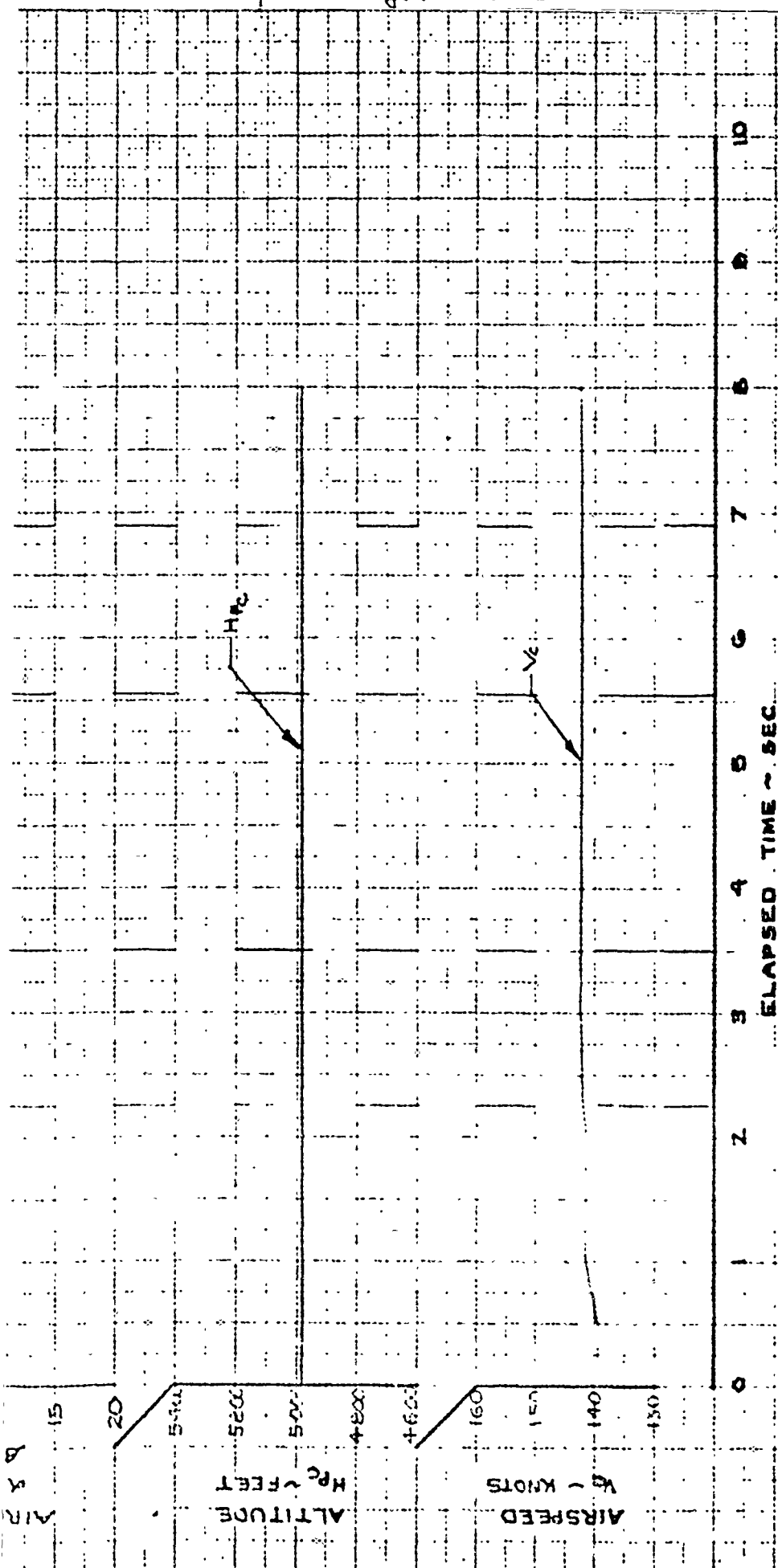
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 96 IN & 96 IN.
3. CARGO C.G. POSITIONS
LONG. ~ FS 1147 & FS 1049
VERT. ~ WL 165 & WL 189

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES 1 & 1
2. CHUTE SIZE 22" x 63"
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ 60' & 100'

FIGURE F-61.

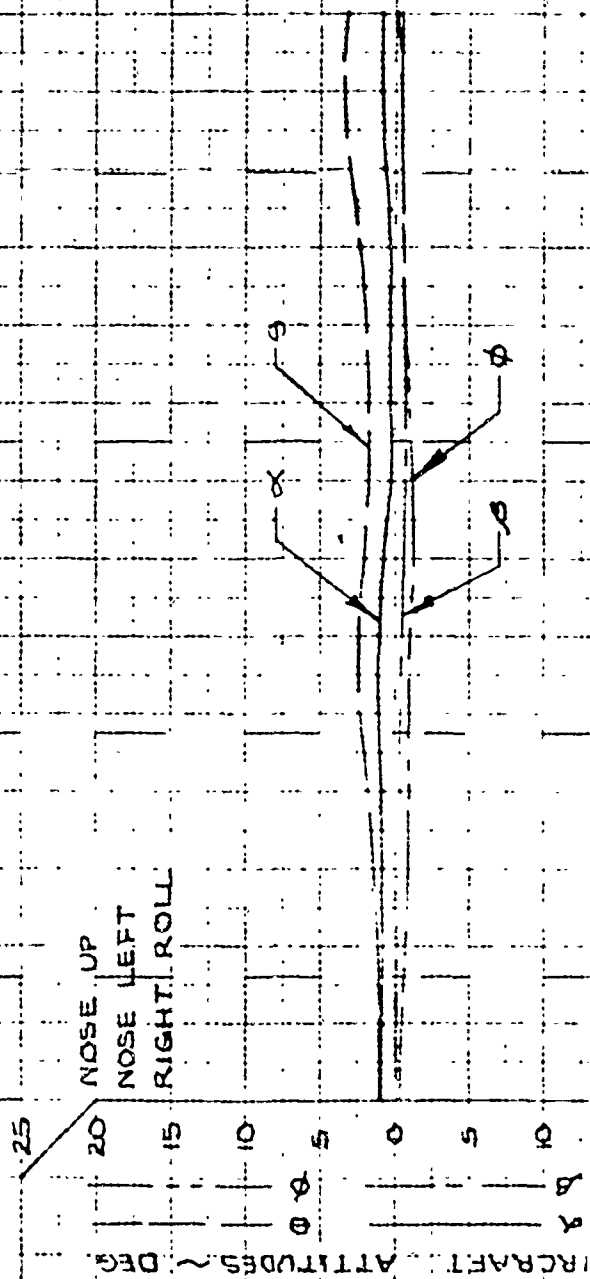
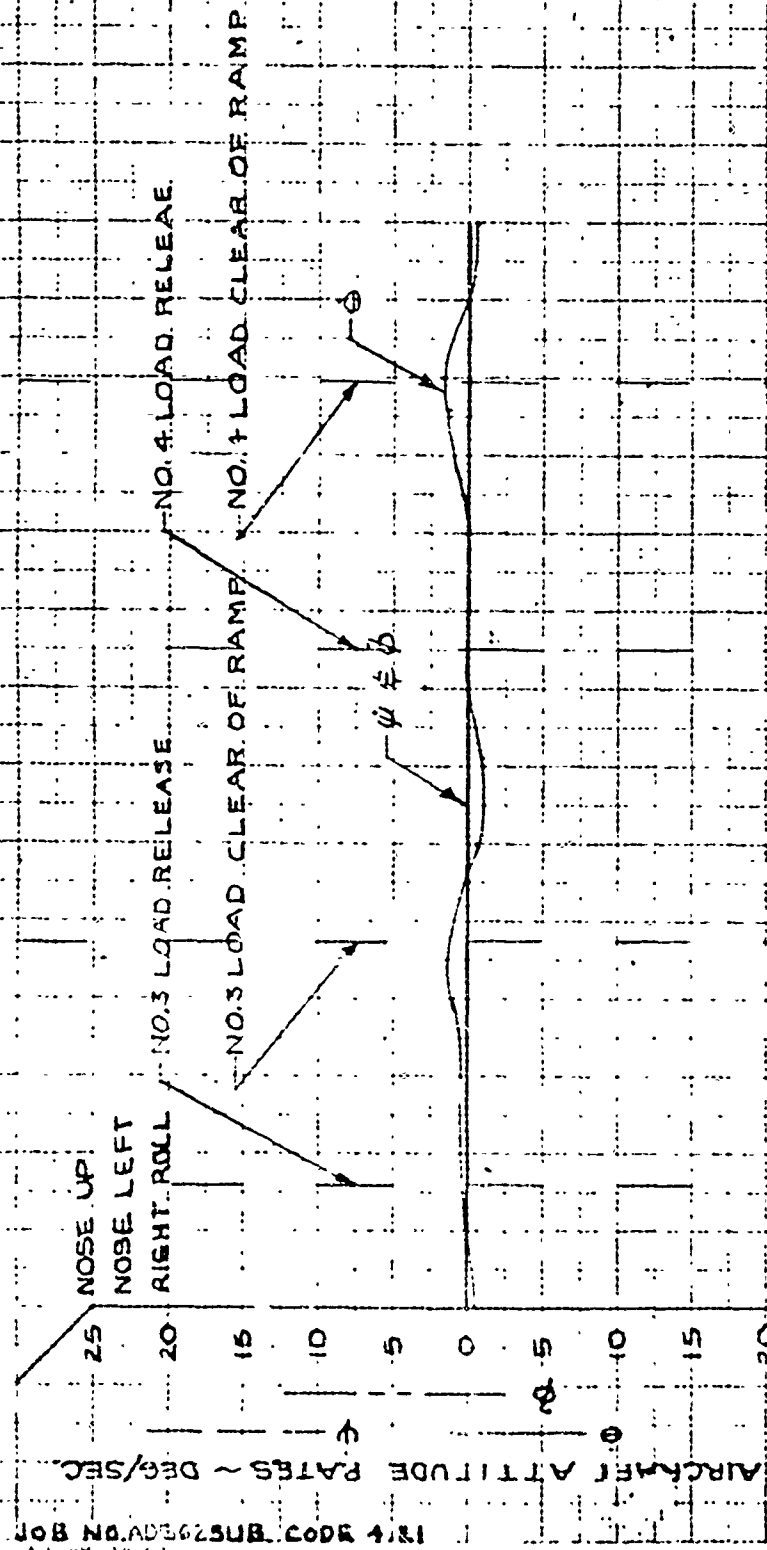


6008

ADS 106A

REVISED 12-16-65
NWH

6008
ADS-X613



PREPARED BY **FCW&NBH**

DATE **7-8-65**

CHECKED BY **JHB**

LOCKHEED GEORGIA COMPANY

AIRCRAFT MODEL LOCKHEED AIRCRAFT CORPORATION

REPORT NO. **ER 5473**

MODEL **C-141A**

PAGE **P-44**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF38077 LAC 6008

TEST DATE **7-7-65**

FLIGHT 160 DROP NO. **4-304**

SHEET **2** OF **14**

CARGO WT. **10350 LBS - 3**

9950 LBS - 4

RUN CONDITIONS

1. G.W. ~ 175920 LBS. 165570 LBS.
2. C.G. PRIOR TO DROP ~ 27.1%MAC 27.2%MAC
3. C.G. AFTER DROP ~ 27.2%MAC 29.3%MAC
4. FLAPS ~ 33%
5. GEAR ~ UP
6. AVG. EPR ~ 1.23 (4 ENGINES)
7. α ~ 0.55 DEG. (AVC ND)

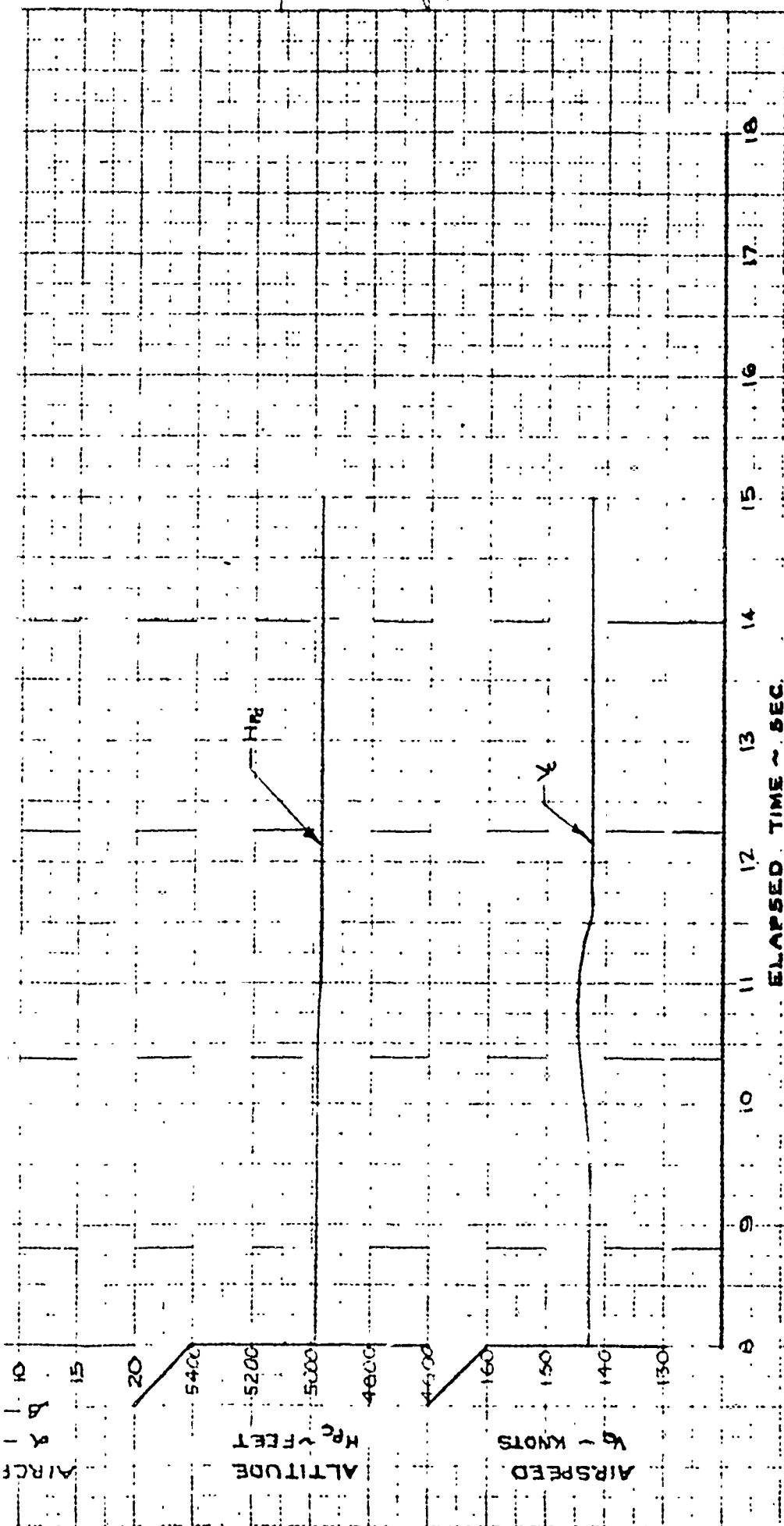
CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORMS
2. LENGTH ~ 96IN & 96IN
3. CARGO C.G. POSITIONS
LONG. ~ F5928 & F5819
VERT. ~ WL165 & WL189

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES 1 & 1
2. CHUTE SIZE 22' & 22'
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ 10' & 10'

FIGURE F-6B

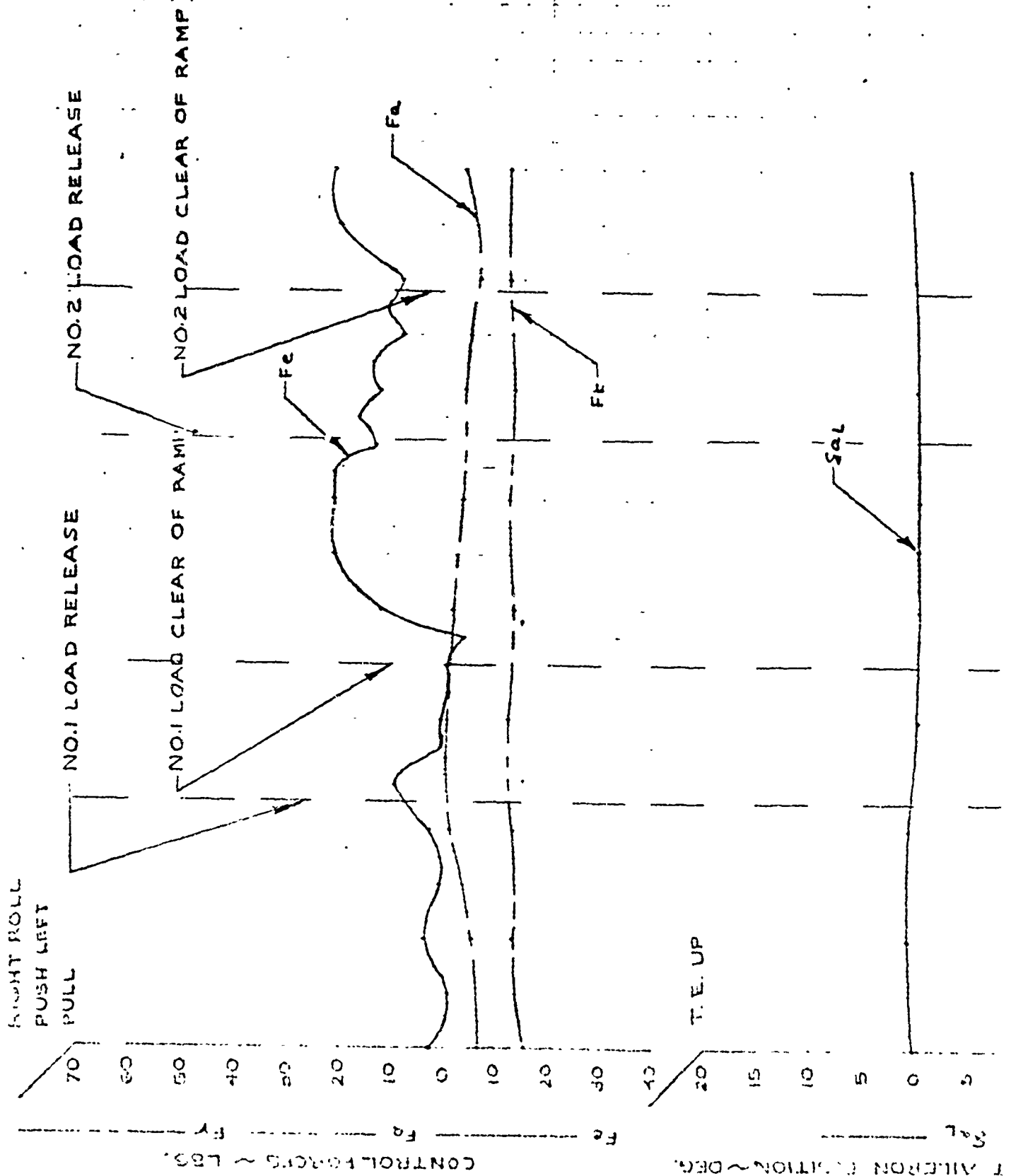


6008

ADS 106B

REVISED 7-16-65
NBH

6008
ADS 106C



124 3405 6250B. CODE 4.21

FCW
7-9-65
JWD

ER 5473
C-141A
F-45

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 7-7-65

FLIGHT 150

DROP NO 41-1E2

SHEET 3 OF 14

CARGO WT. 9750 LBS. -1

10130 LB -2

NOTE:

SEE FIGURE 6 SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

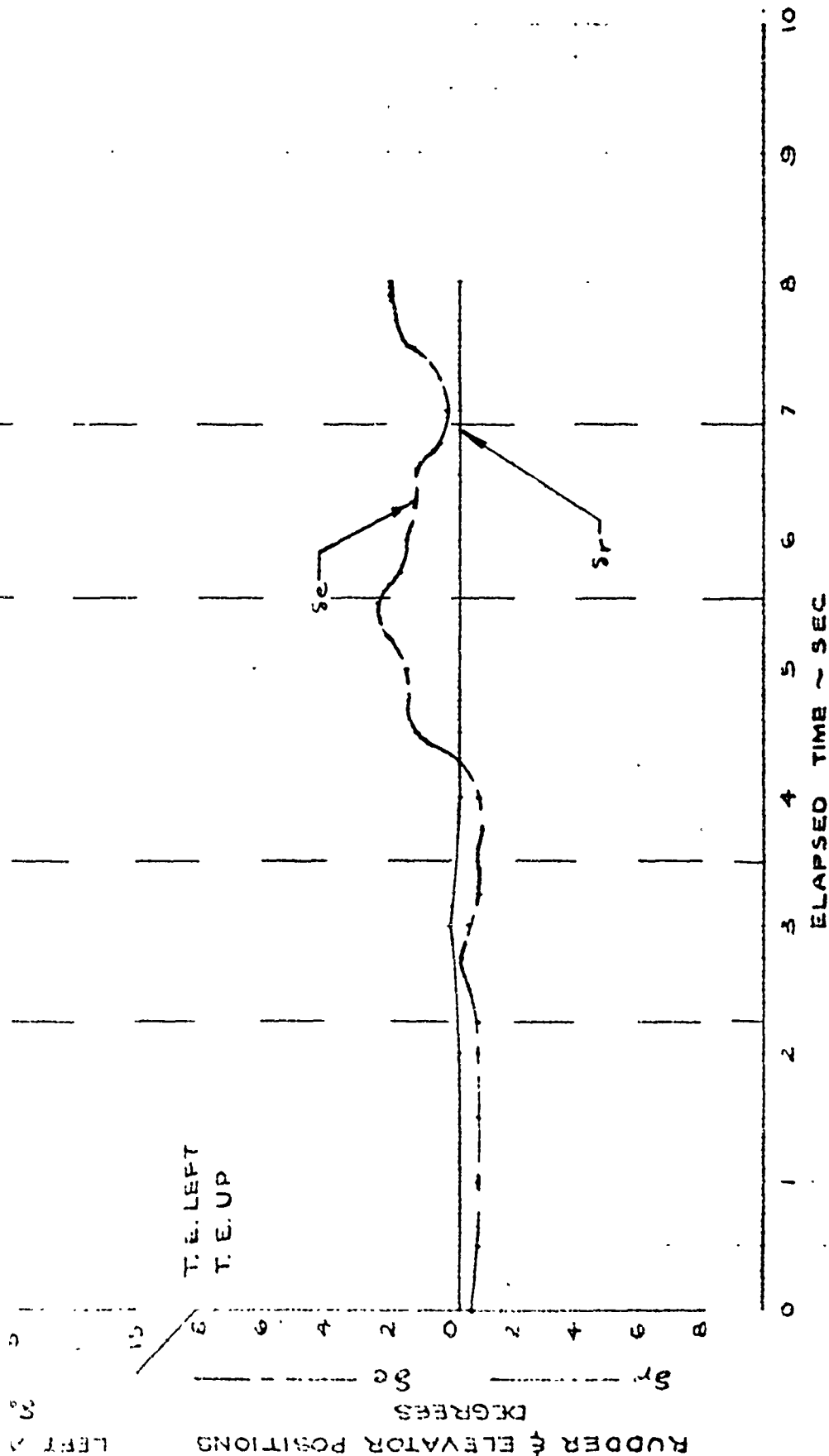


FIGURE F-6C

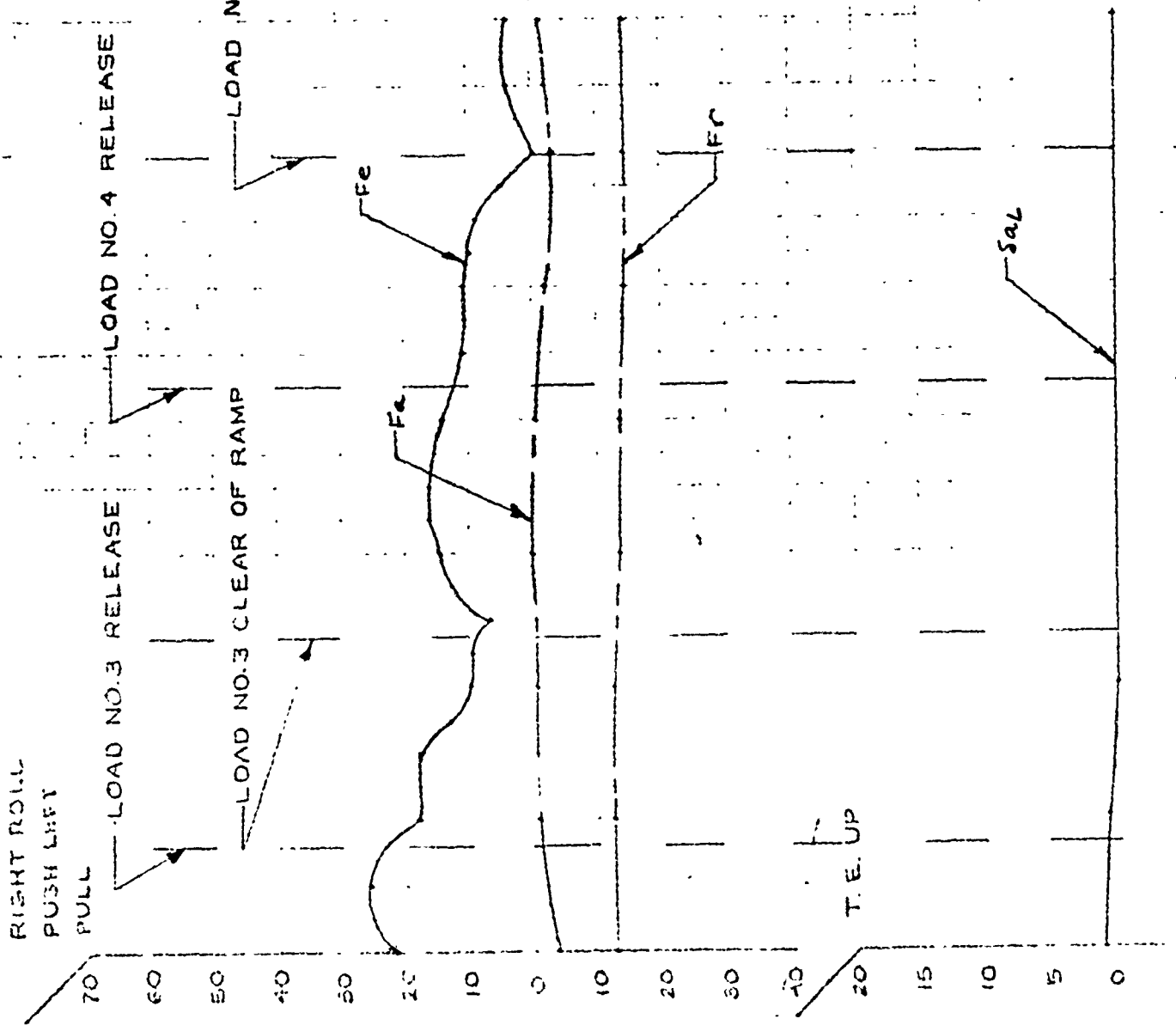
6008
ADS 106C



12.4 7403 RPS 2954 ON 900

CONTROL POINTS ~ LBS.

FROM POSITION ~ DEG.



RIGHT ROLL
PUSH LEFT
PULL

LOAD NO. 3 RELEASE

LOAD NO. 3 CLEAR OF RAMP

LOAD NO. 4 RELEASE

LOAD NO. 4 CLEAR OF RAMP

T.E. UP

Sal

6008

ADS 106D

TESTED
7-8-65
JOP

ER 5473
C-141A
F-46

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 23 8077

LAC 6008

TEST DATE 7-7-65

FLIGHT 160

DROP NO 41-364

SHEET 4 OF 14

CARGO WT. 10350 LBS.-3
9950 LBS.-4

NOTE:

SEE FIGURE 68, SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

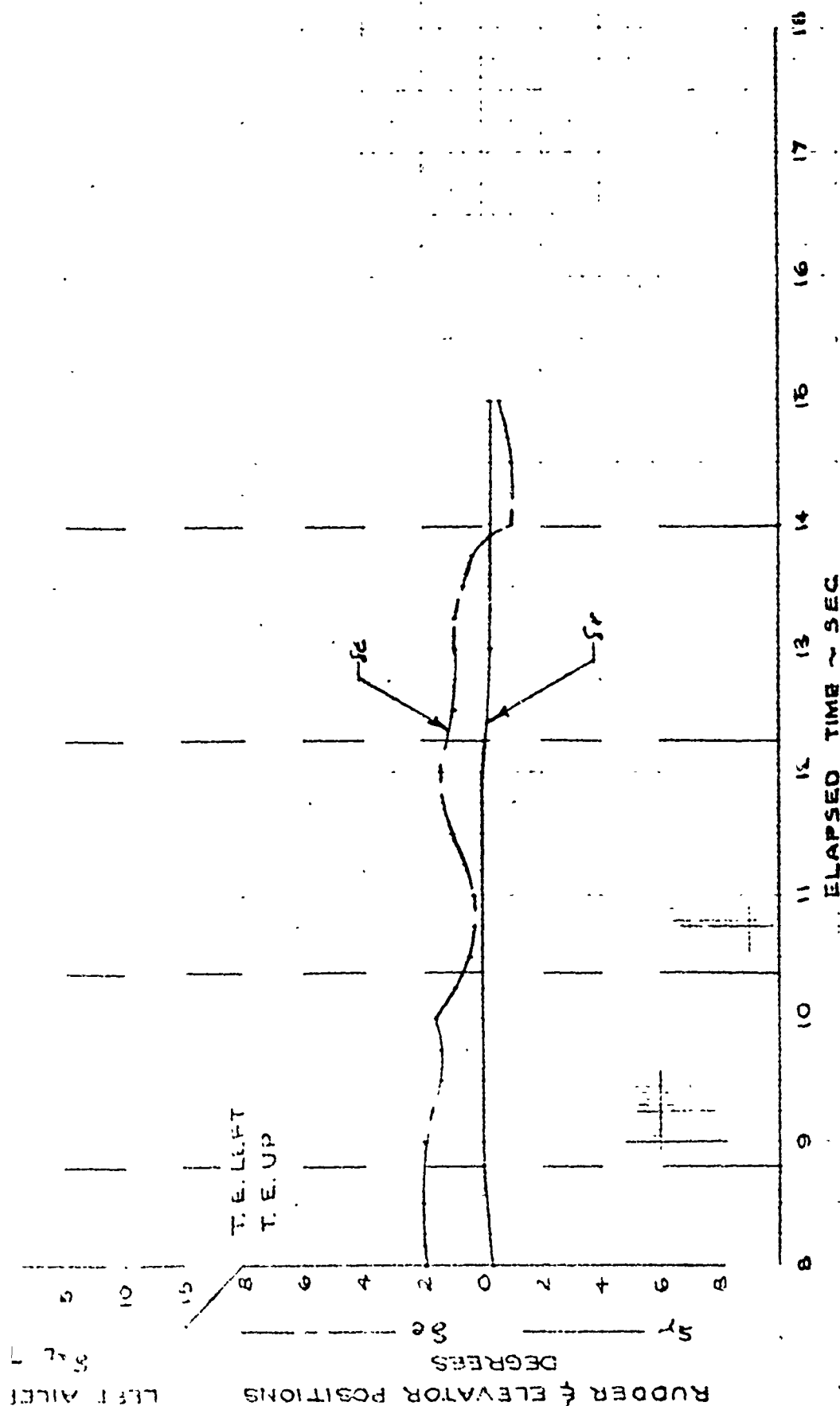


FIGURE F-60

6008
AD 106D

6008
ADS-106E

NOTE: ϕ CALCULATED FROM NA DATA

NOSE UP

40

20

0

20

40

UP ACCEL.

3.0

2.8

2.6

2.4

2.2

2.0

PITCHING ACCELERATION DEG/SEC²

ACCELERATIONS ~ 9 N. DESIGN 277

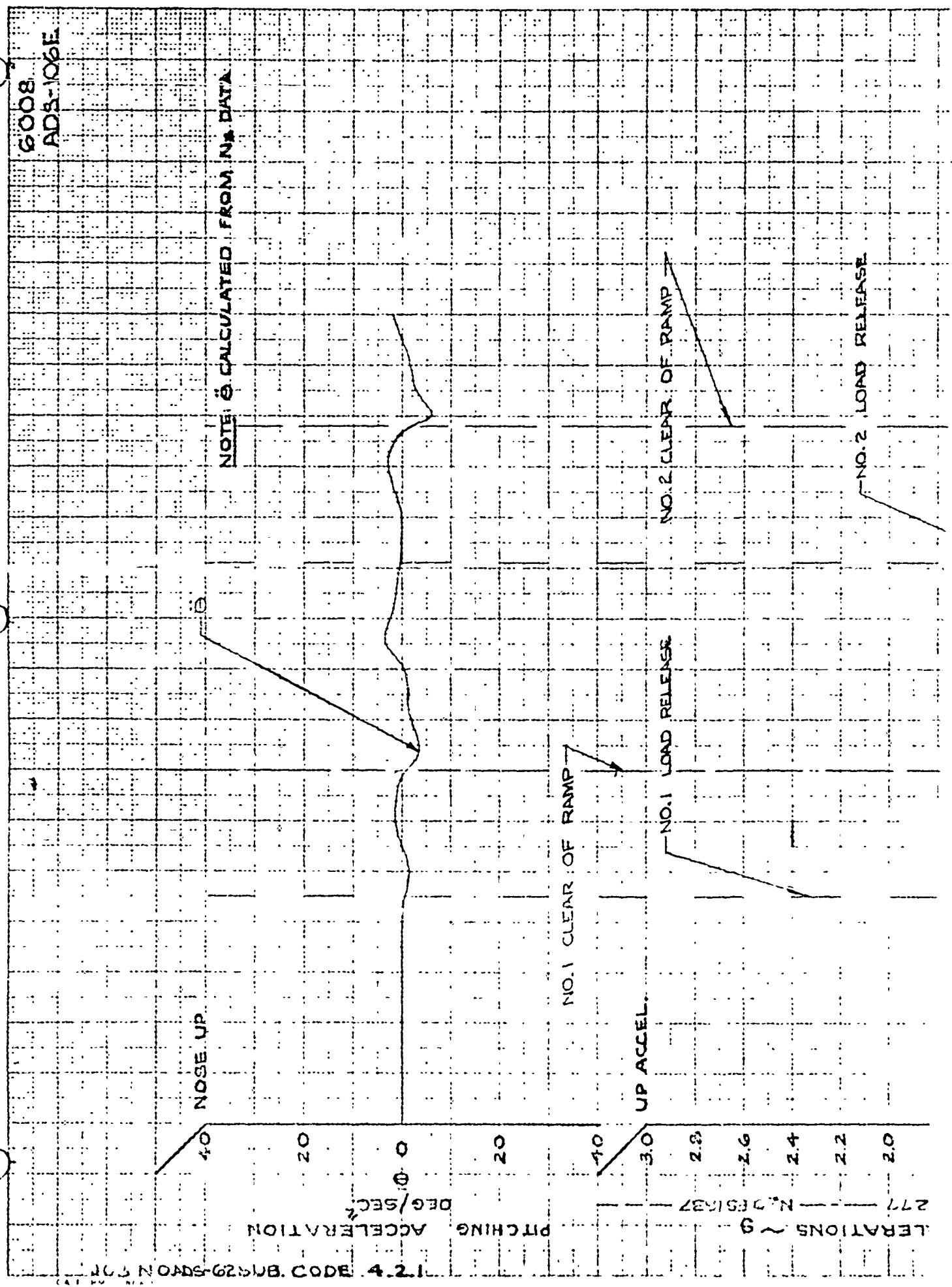
1.4 CODE 4.2.1

NO.1 CLEAR OF RAMP

NO.1 LOAD RELEASE

NO.2 CLEAR OF RAMP

NO.2 LOAD RELEASE



PREPARED BY T.E.D.

DATE 7-8-66

CHECKED BY E.D.

LOCKHEED GEORGE A COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. 5473

MODEL C-141A

PAGE 1

TIME HISTORY OF AERIAL DE MANEUVER

MODEL C141A

AFG3-8077

LAC. 6008

TEST DATE 7-7-65

FLIGHT 150

DROP NO. A1

SHEET 3 OF 14

CARGO WT. 9750 LBS-1

10,130 LBS-2

NOTE:

SEE FIGURE 6 SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

0 1 2 3 4 5 6 7 8

N₂ @ FS 2977 ~ NOT USEABLE

N₂ @ FS 1637

N₂ @ FS 932 (C.G.)

N₂ @ FS 932 (C.G.)

PWD. ACCEL.

VERTICAL ACCEL
N₂ @ C.G.
N₂ @ FS 27

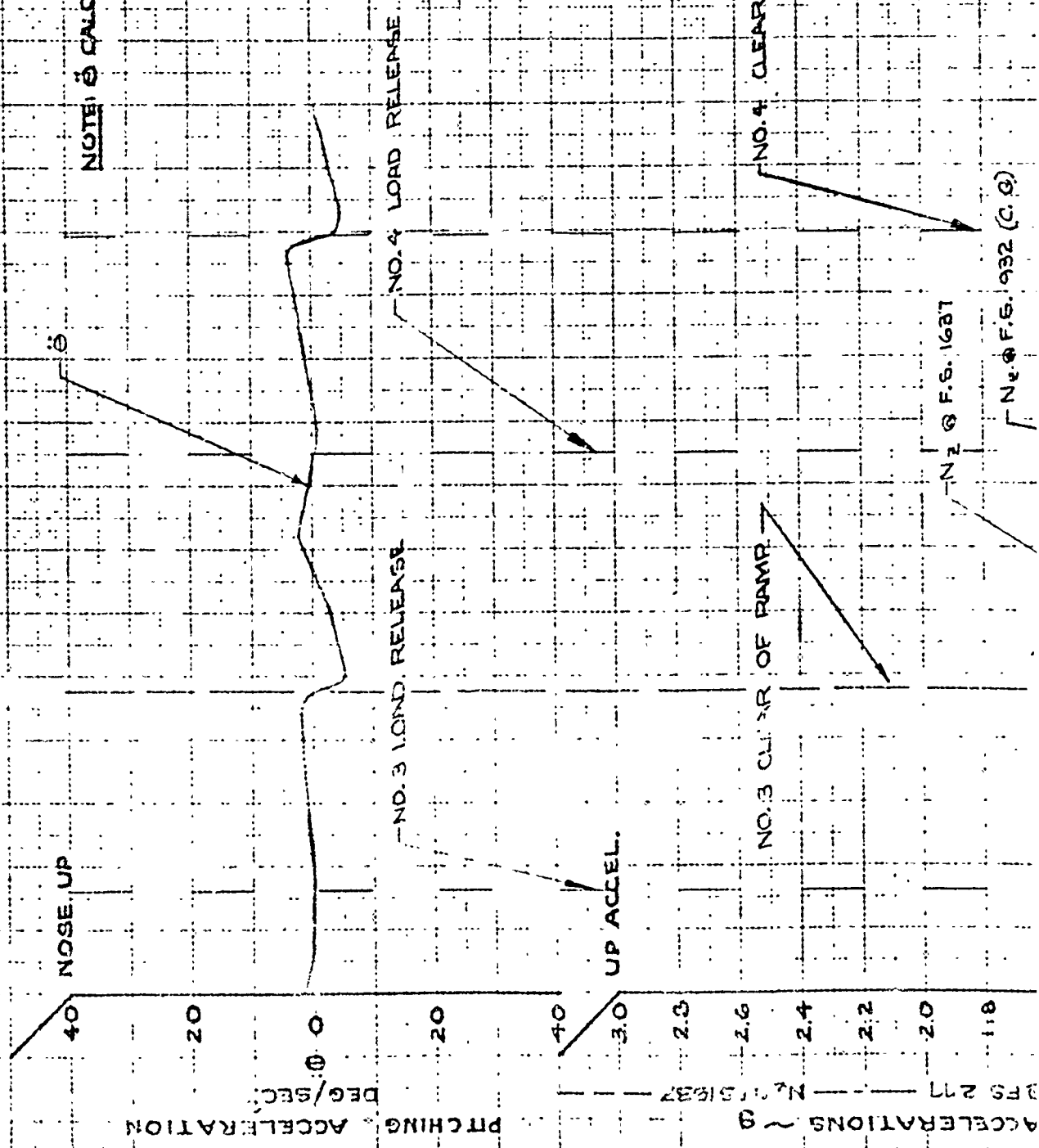
C.G. LONGITUDINAL
ACCELERATION ~ N₂ x 9

FIGURE F-6E

6008
ADS-106E

6008
ADS-106F

NOTE: δ CALCULATED FROM N₂ DATA



UP ACCEL.

NO.3 LOAD RELEASE

NO.4 LOAD RELEASE

NO.3 CLEAR OF PUMP

NO.4 CLEAR OF PUMP

N_2 F.S. 1637

N_2 F.S. 1932 (C.G.)

PREPARED BY **TED**

DATE **7-8-65**

CHECKED BY *[Signature]*

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO

ER 5473

MODEL

C-141A

PAGE

F-48

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-8077

LAC 6008

TEST DATE: 7-7-65

FLIGHT-150

DROP NO-41

SHEET 6 OF 14

CARGO WT. 10350 LBS-3

9.950 LBS-4

NOTE:

SEE FIGURE 6 SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

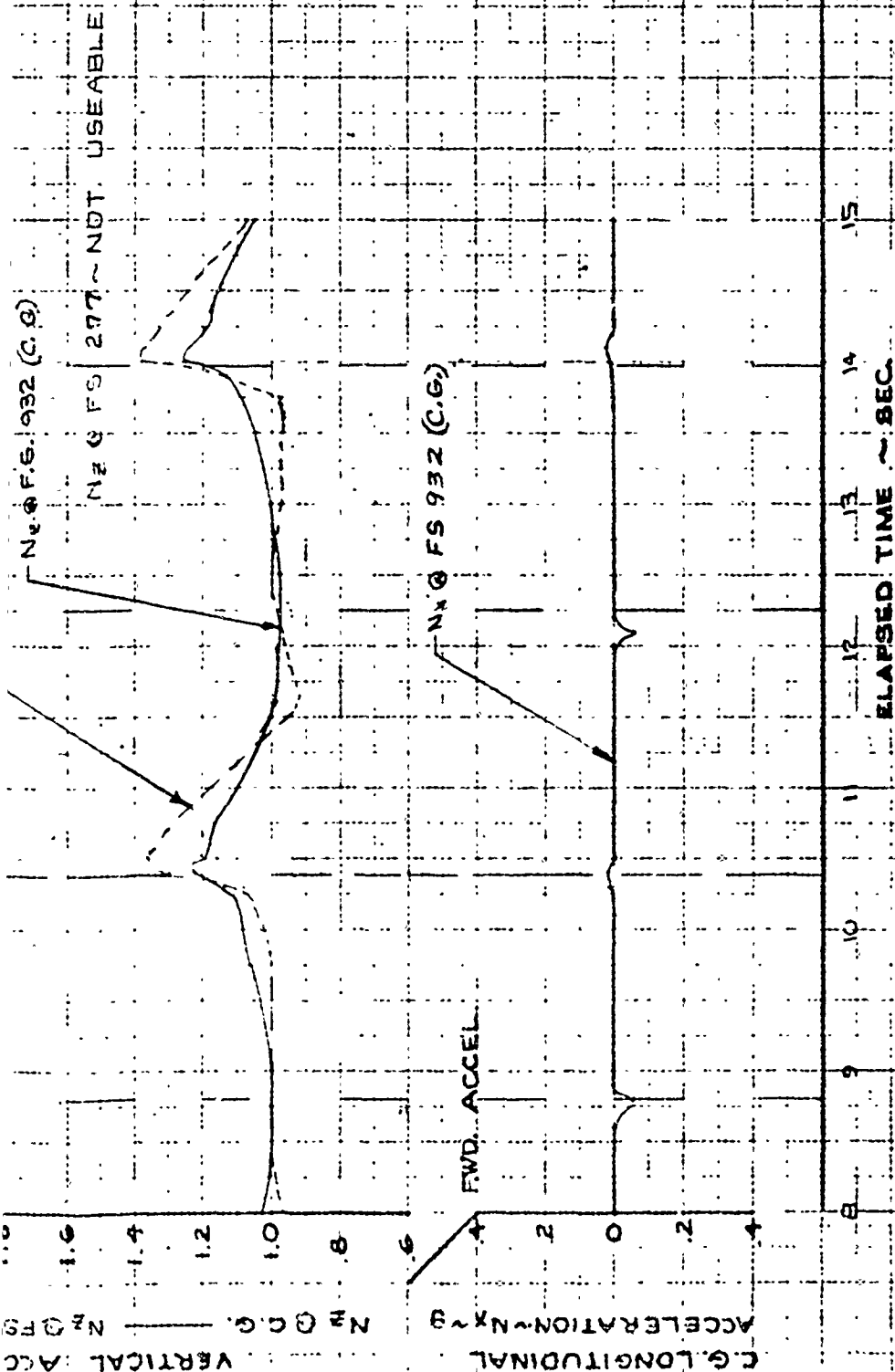
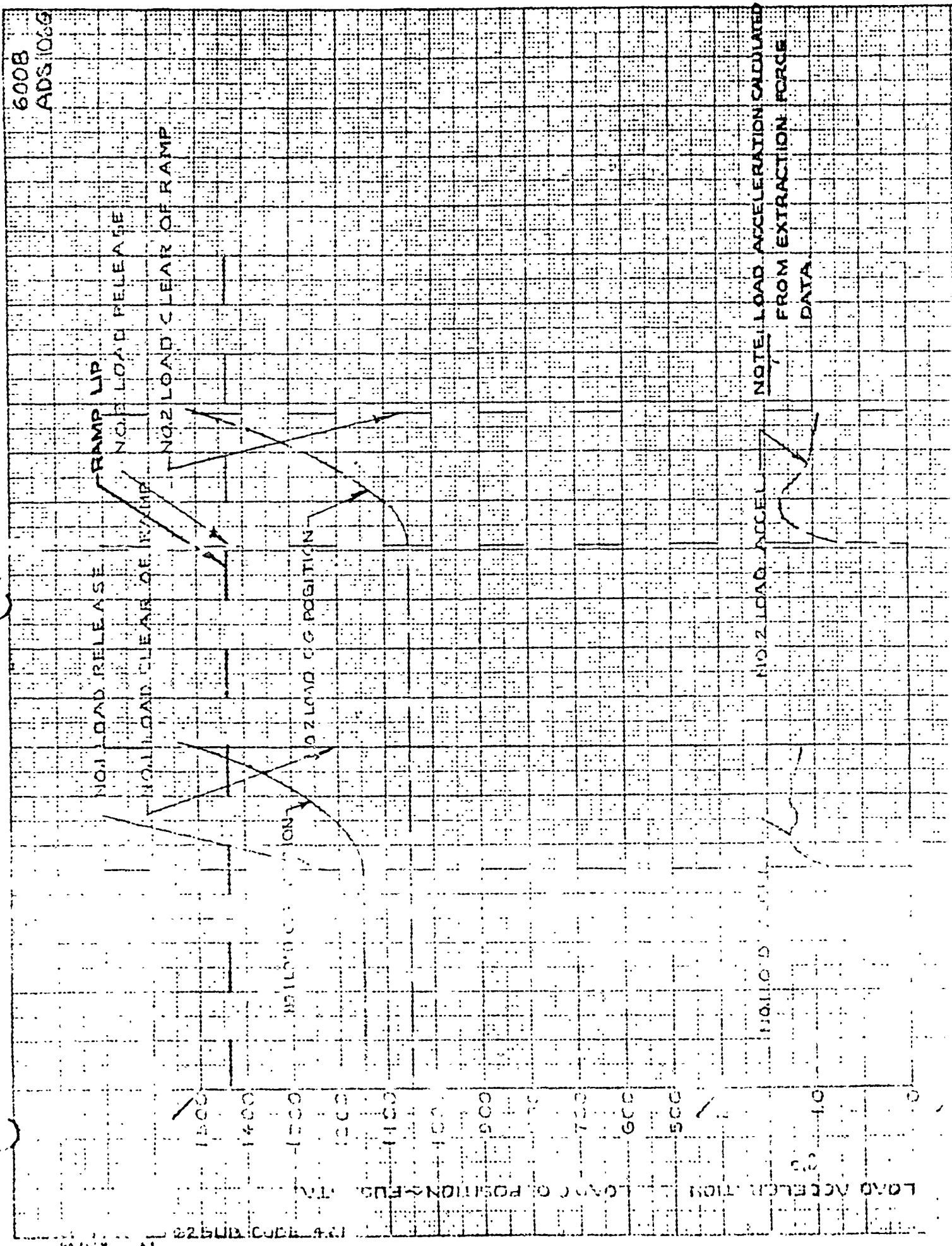


FIGURE F-6 F

6008
ADS-106 F

6008
ADS102G



PREPARED BY ECW
DATE 7-9-65
CHECKED BY JWD

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473
MODEL C-141A
PAGE 1-49

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
AF 63-8077 LAC 6008

TEST DATE 7-7-65
FLIGHT 150 DROP NO. 1-1

SHEET 7 OF 12

CARGO WT 150 LB - 1
100 LB - 2

NOTE:
SEE FIGURES SHEET 1 OF 12
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

NO. 2 EXTRACTION FORCE

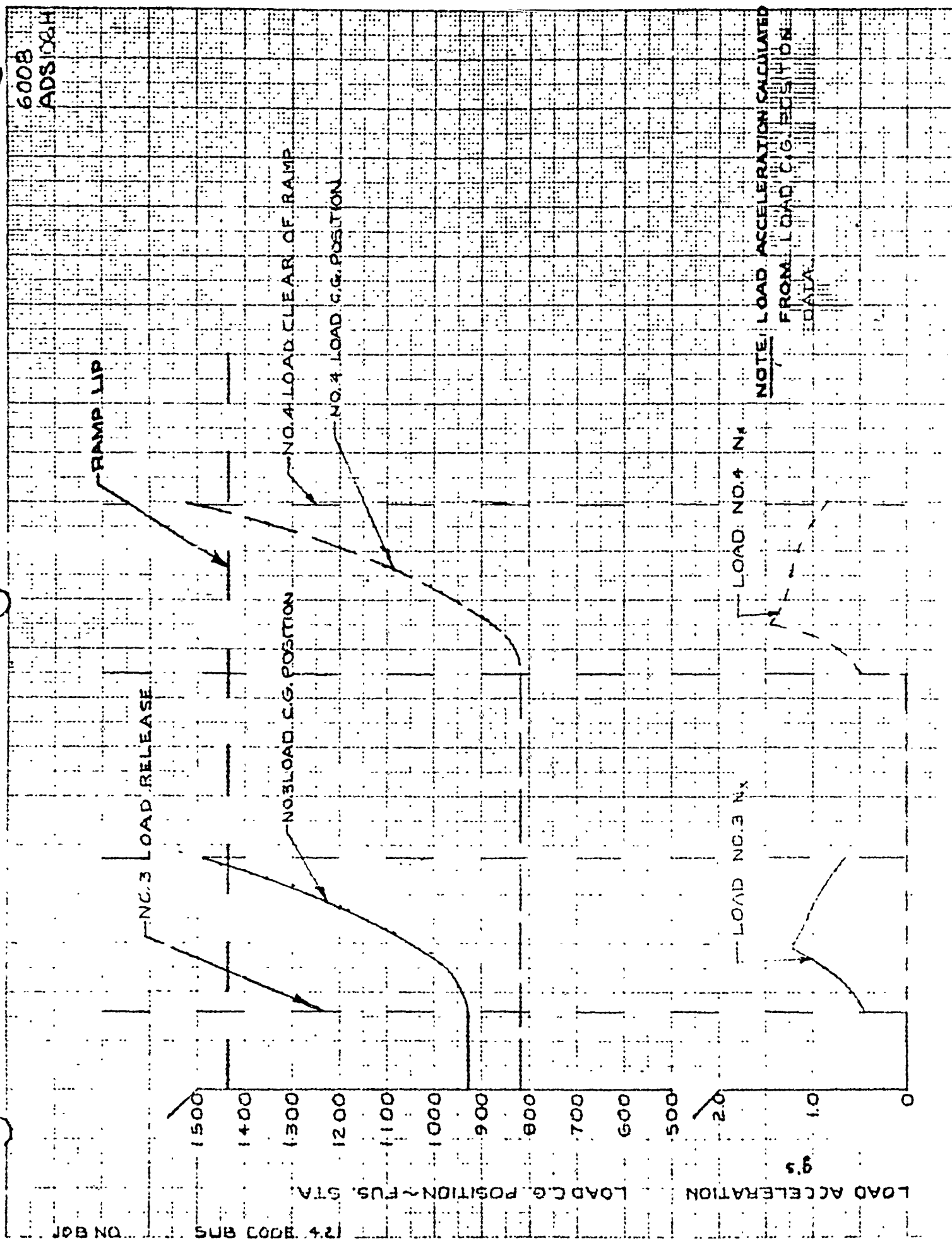
NO. 1 EXTRACTION FORCE

ELAPSED TIME - SEC

ELAPSED TIME

EXTRACTION FORCE - LBS - 100

ADS



PREPARED BY FCW

DATE 7-7-65

CHECKED BY JWD

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE F-50

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 7-7-65

FLIGHT 150

DROP NO. 41-3&4

SHEET 8 OF 14

CARGO WT. 10350 LBS.-3

9950 LBS.-4

NOTE:

SEE FIGURE E-6B SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

NO. 4 LOAD RELEASE

NO. 3 LOAD CLEAR OF RAMP

NO. 3 & NO. 4 EXTRACTION FORCE INSTRUMENTATION - NA

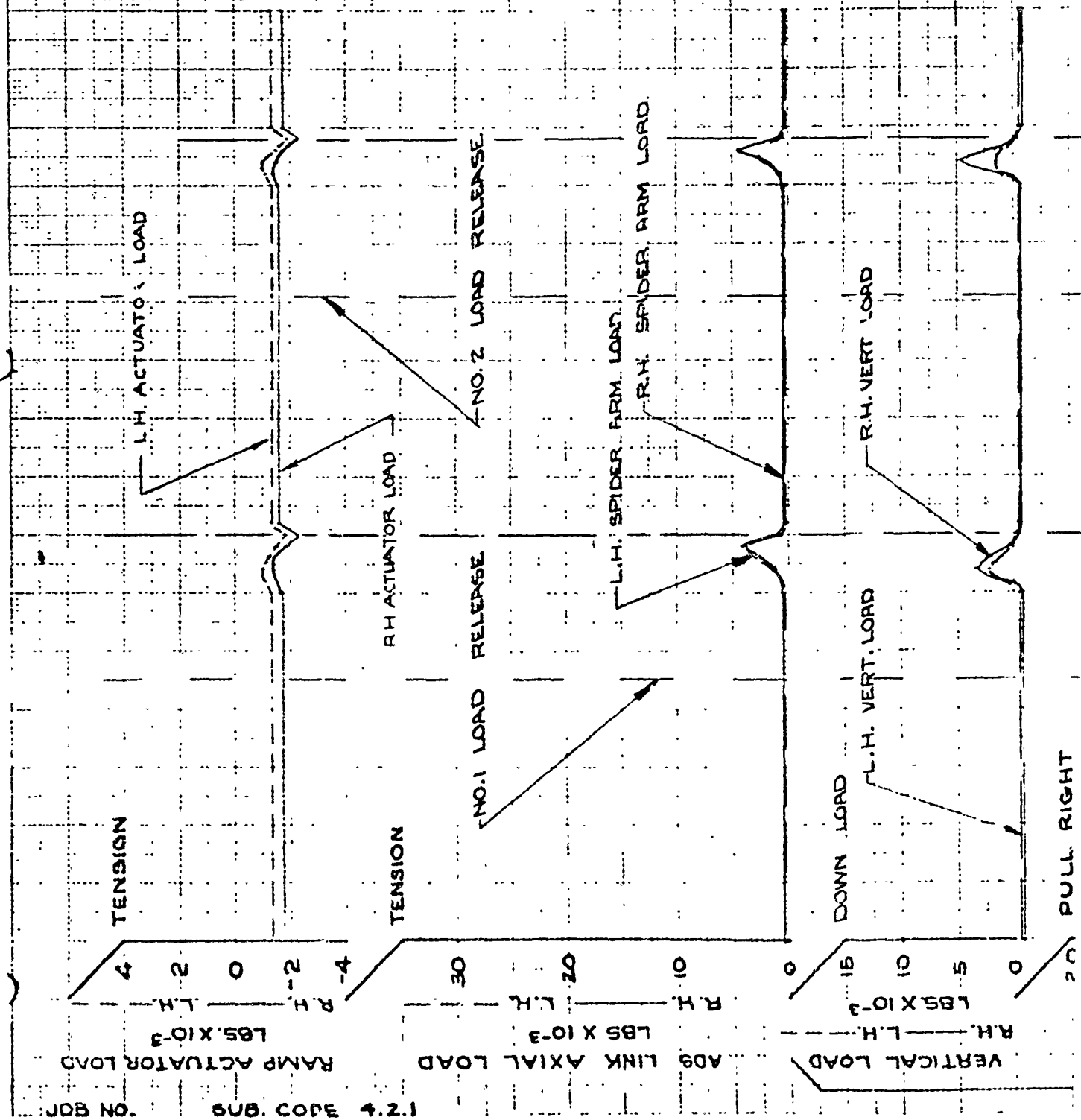
ELAPSED TIME - SEC

FIGURE E-6H

EXTRACTION FORCE - LBS. $\times 10^{-3}$

6008
ADS 106 H

6008
ADS-1061



TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 7-7-65

FLIGHT-150

DROP NO. 41

SHEET 9 OF 14

CARGO WT. 9750 LBS-1
 10130 LBS-2

NOTE:
 SEE FIGURE E-6 ASHEET 1 OF 14
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

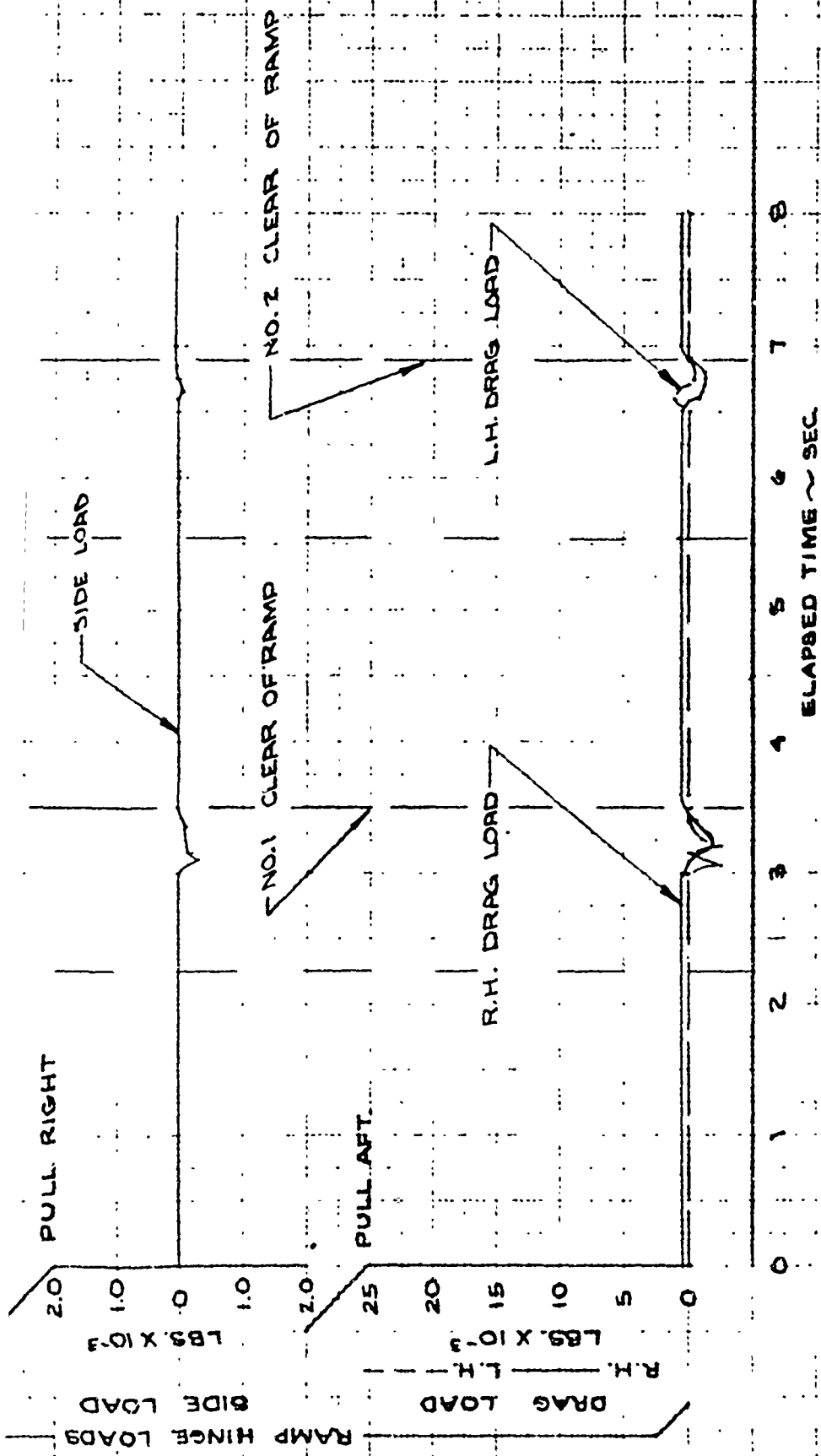
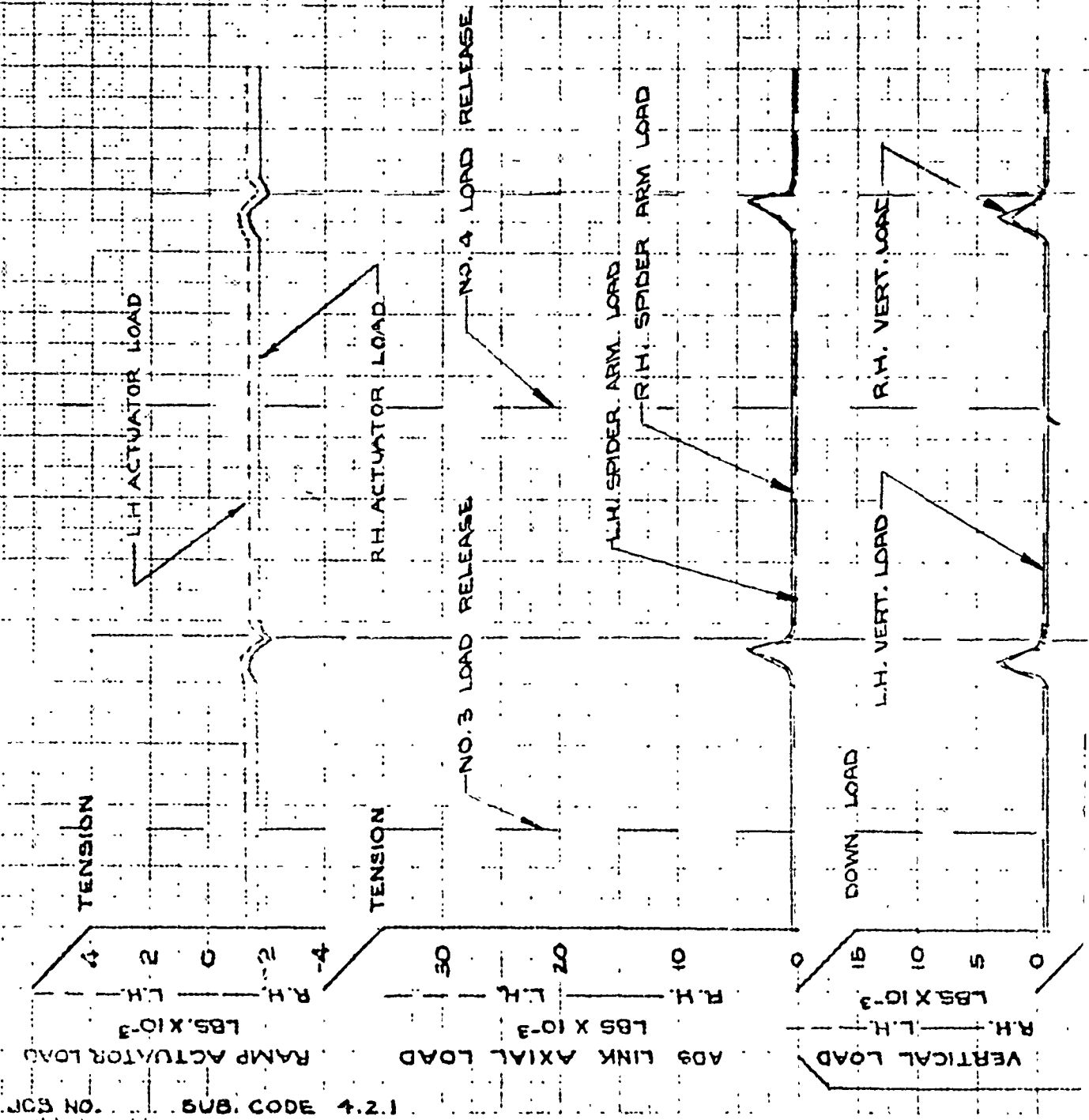


FIGURE E-6 I

6008
 ADS-1061

6008
ADS-106a



NO. 3 SUB. CODE 4.2.1

PREPARED BY **TCD**
 DATE **7-9-65**
 CHECKED BY **HW**

REPORT NO. **ER 5473**
 MODEL **C-141A**
 PAGE **F-52**

TIME HISTORY OF AERIAL DELIVERY MANGUYER

MODEL **C-141A**

AF 63-8077

LAC 6008

TEST DATE **7-7-65**

FLIGHT **150**

DROP NO **141**

SHEET **10** OF **14**

CARGO WT. **10350 LBS-3**
2950 LBS-4

NOTE:
 SEE FIGURE **F-6B** SHEET **2** OF **14**
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

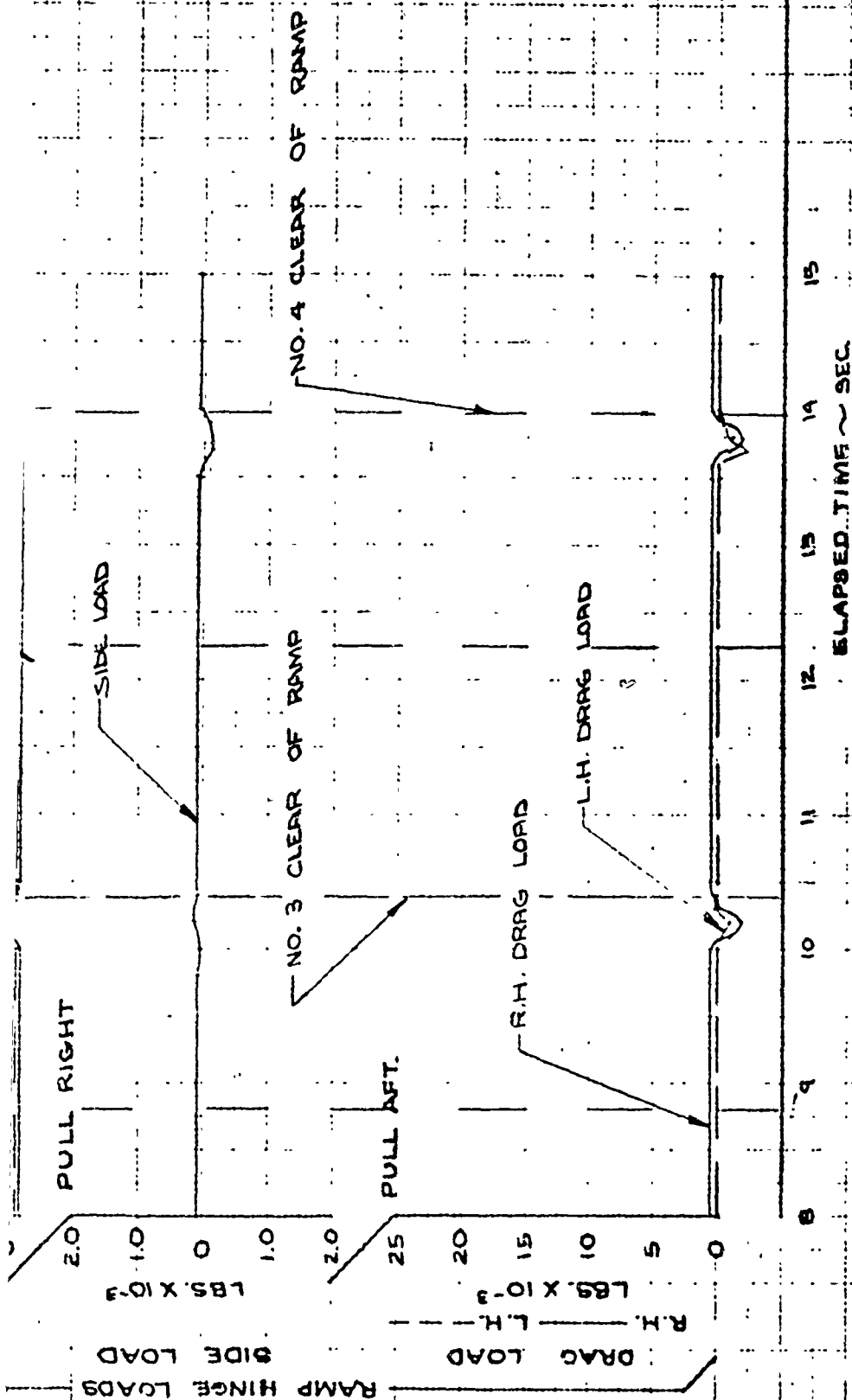
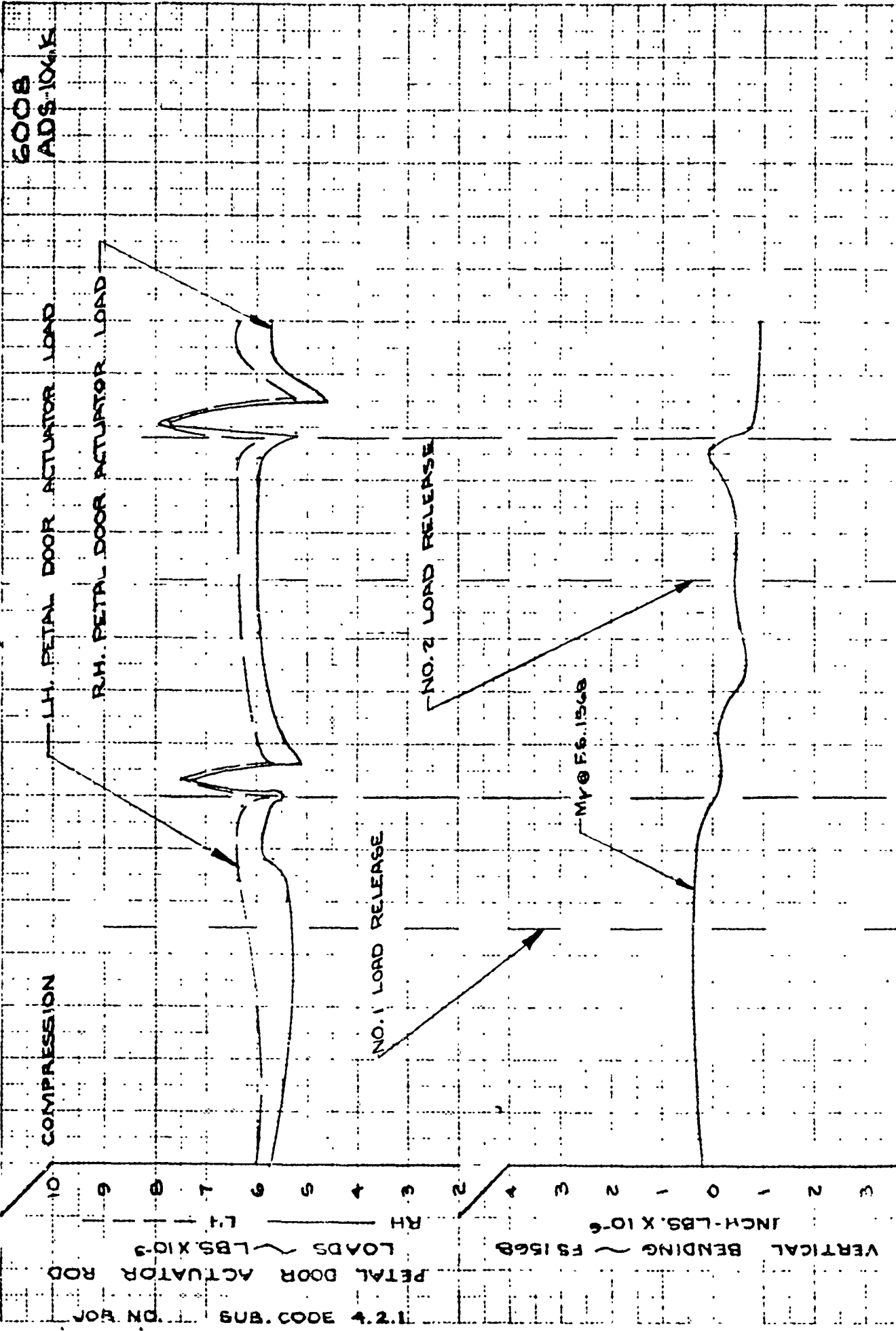


FIGURE **F-6J**

6008
 ADS-106J



TED
7-9-65
JWD

ER 5473
C-141A
F-53

TIME HISTORY OF AERIAL DELIVER MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 7-7-69

FLIGHT-150

DROP NO. 14

SHEET 11 OF 14

CARGO WT. 9750 LBS - 1
10130 LBS - 2

NOTE:
SEE FIGURE 6 AS SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

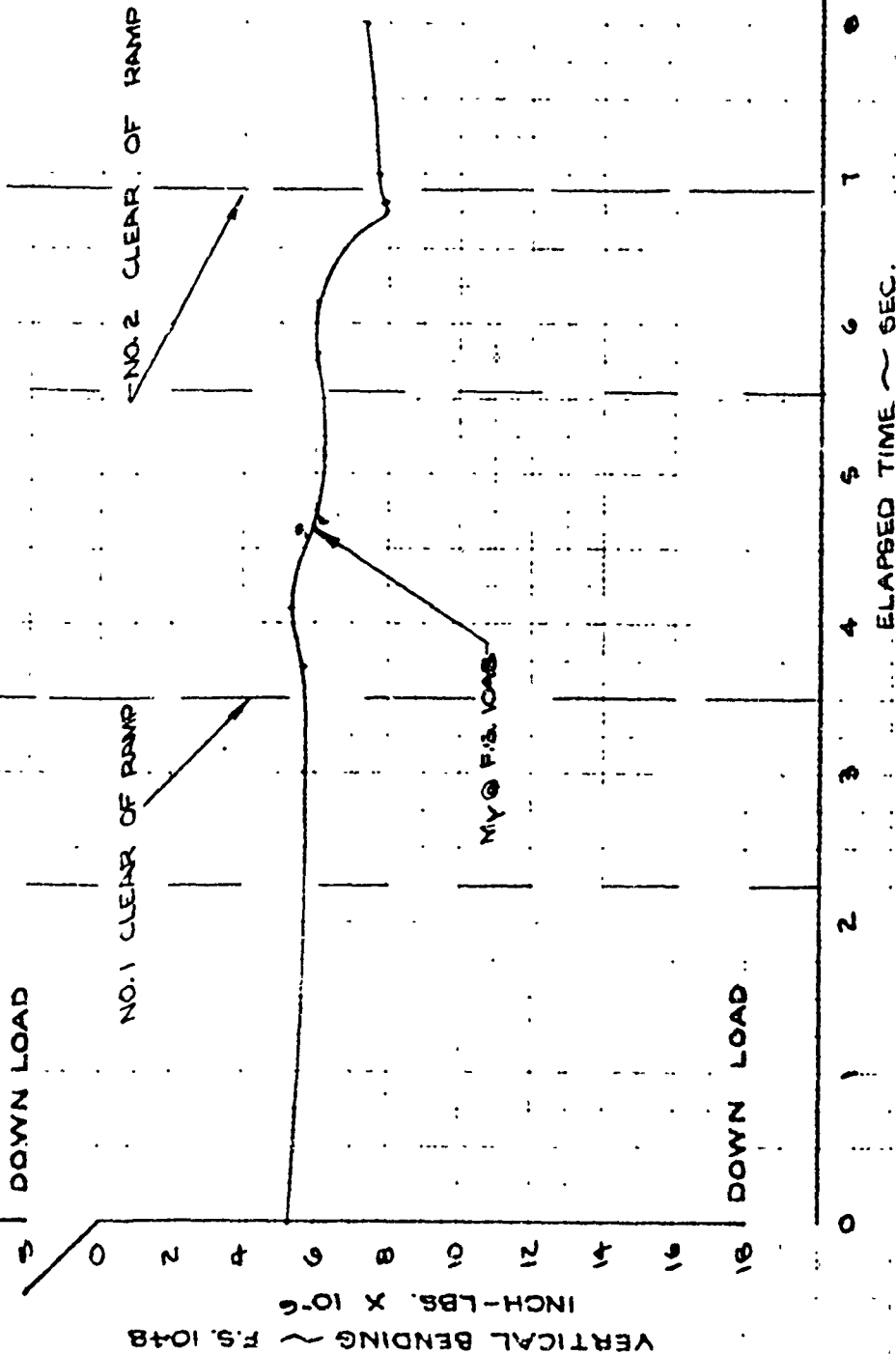


FIGURE F-6K

6008
ADS-101

6008
ADS-106L

L.H. PETAL DOOR ACTUATOR LOAD
R.H. PETAL DOOR ACTUATOR LOAD

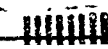
NO.3 LOAD RELEASE
NO.4 LOAD RELEASE

—MV @ FB. 1568

COMPRESSION

DOWN LOAD

PETAL DOOR ACTUATOR ROD
LOADS - LBS. X 10⁻³
LH RH
VERTICAL BENDING - FS 1568
INCH-LBS. X 10⁻⁶



PREPARED BY: TED
 DATE: 7-9-65
 CAL. REF. NO. JWP

ENGINEERED BY: R. A. COMPANY

REPORT NO. ER 5473
 MODEL C-141A
 FALL F-54

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A
 AFG3-B077 LAC 6008
 TEST DATE 7-7-65
 FLIGHT ~ 150 DROP NO. 141

SHEET 12 OF 14

CARGO WT. 10350 LBS-3
 9950 LBS-4

NOTE:
 SEE FIGURE F-6L SHEET 2 OF 14
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

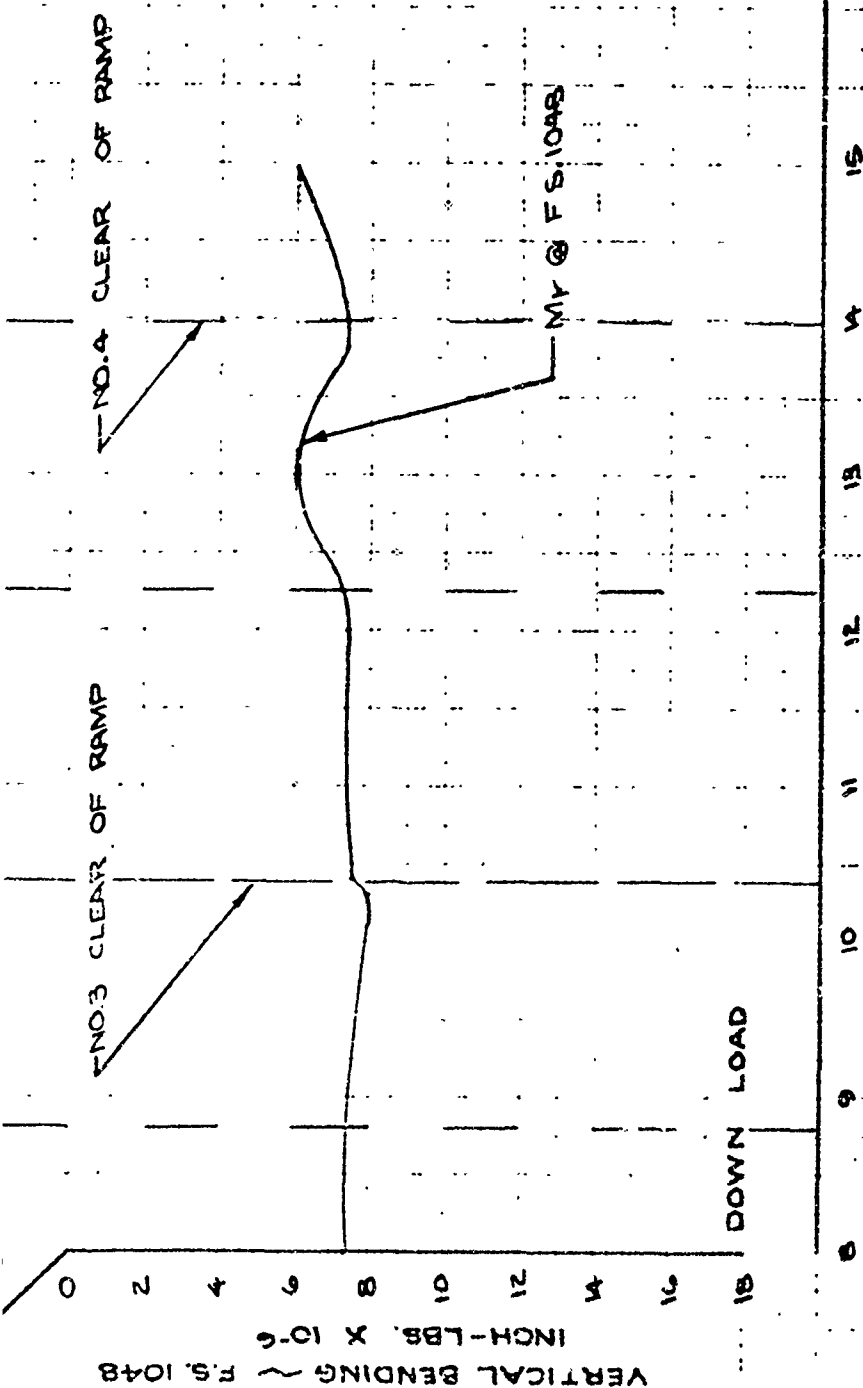


FIGURE F-6L

6008
 ADS-106L

或



MUM
7-9-65

ER 5473
C-141A
F-55

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 7-7-65

FLIGHT ~ 150

DROP NO. ~ 41-122

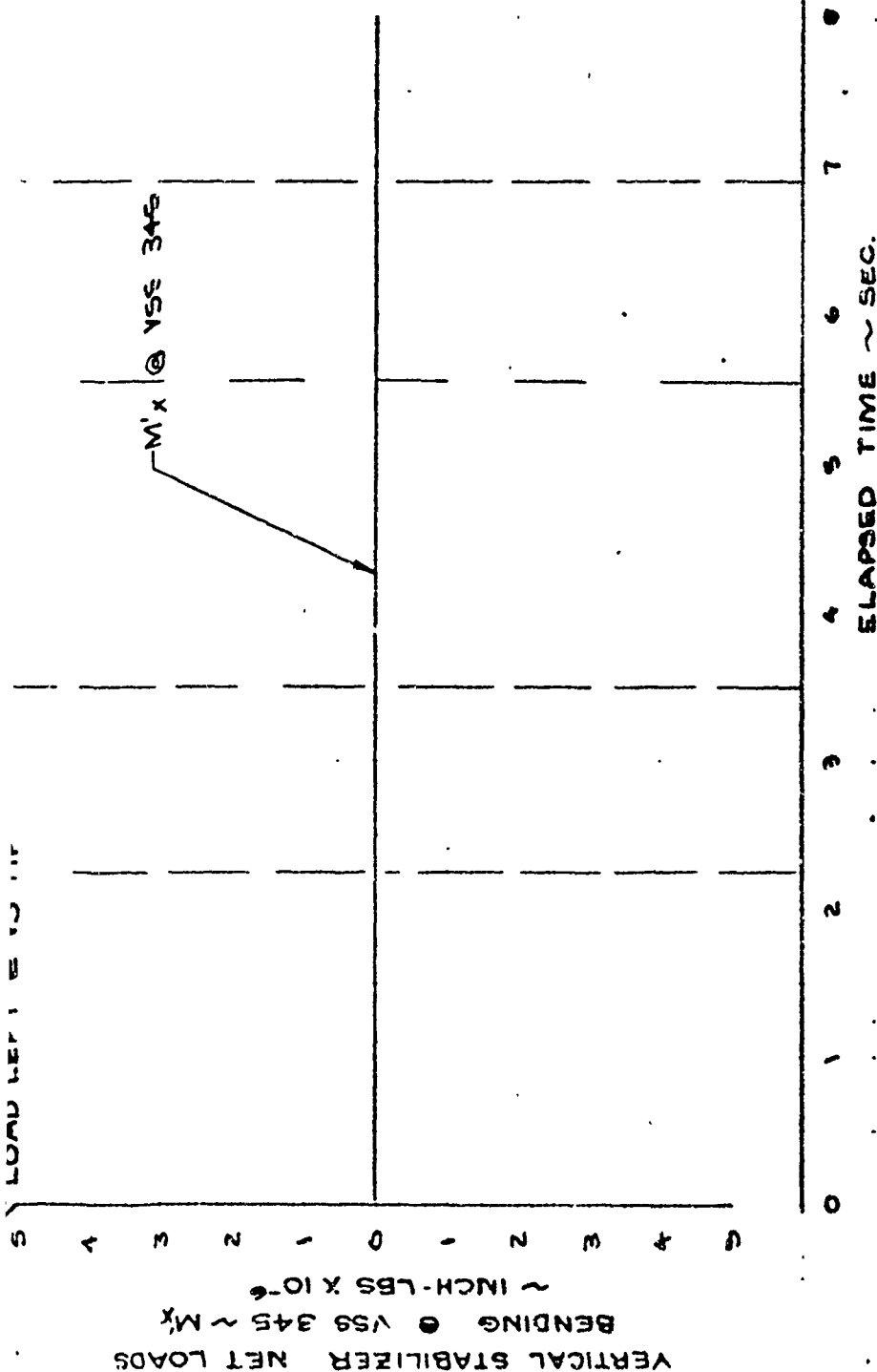
SHEET 13 OF 14

CARGO WT. 9750 LBS. 1

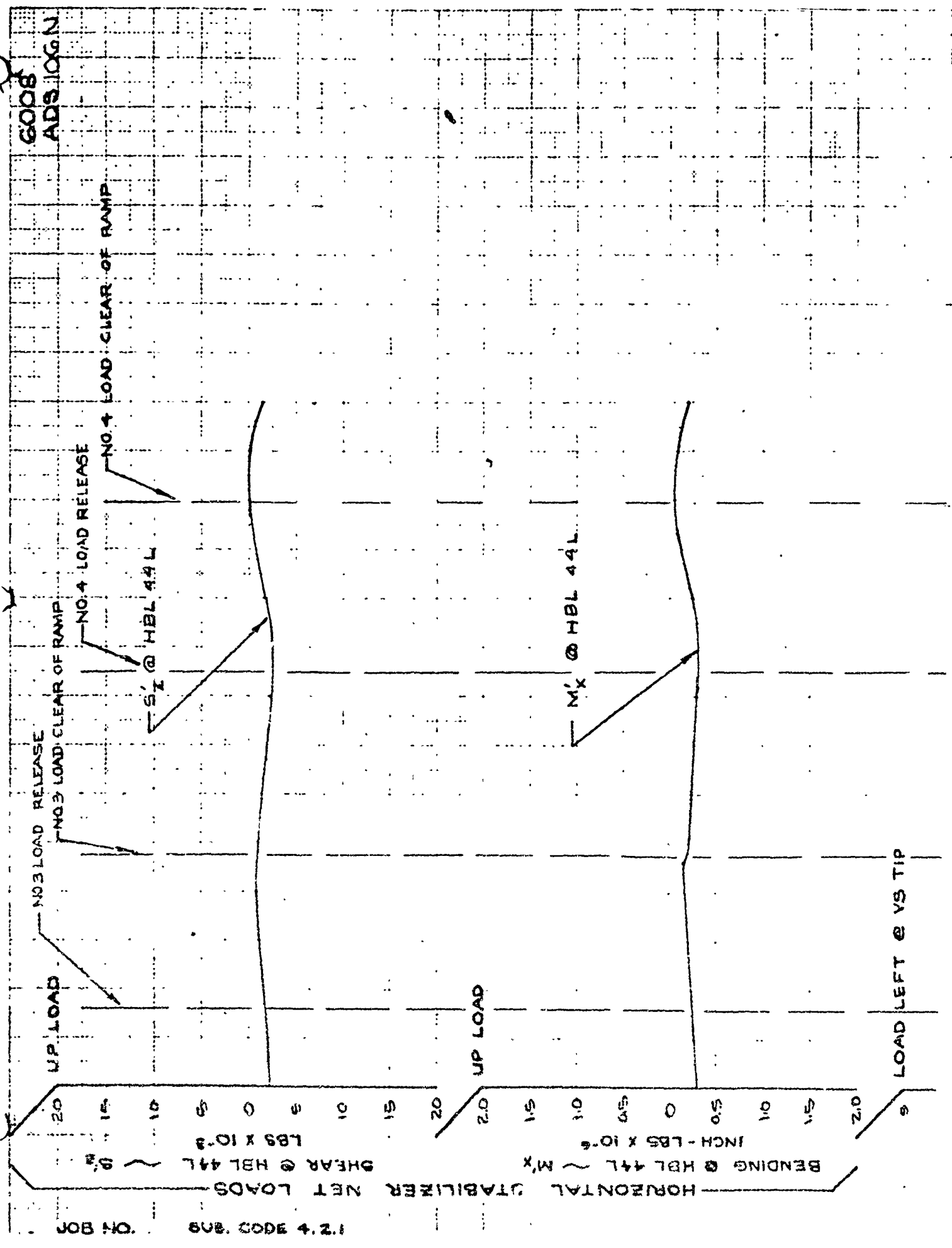
10.130 LBS. 2

NOTE:
SEE FIGURE 6, SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

FIGURE F-6 M



6008
ADS106M



MJM
7-9-65

JWP

ER 5473

C-141A

F-56

TIME HISTORY OF AERIAL DELIVERY
MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 7-7-65

FLIGHT-150

DROP NO. ~ 11-14

SHEET 11 OF 14

CARGO WT. 10350 LBS. 3

9950 LBS. 4

NOTE:

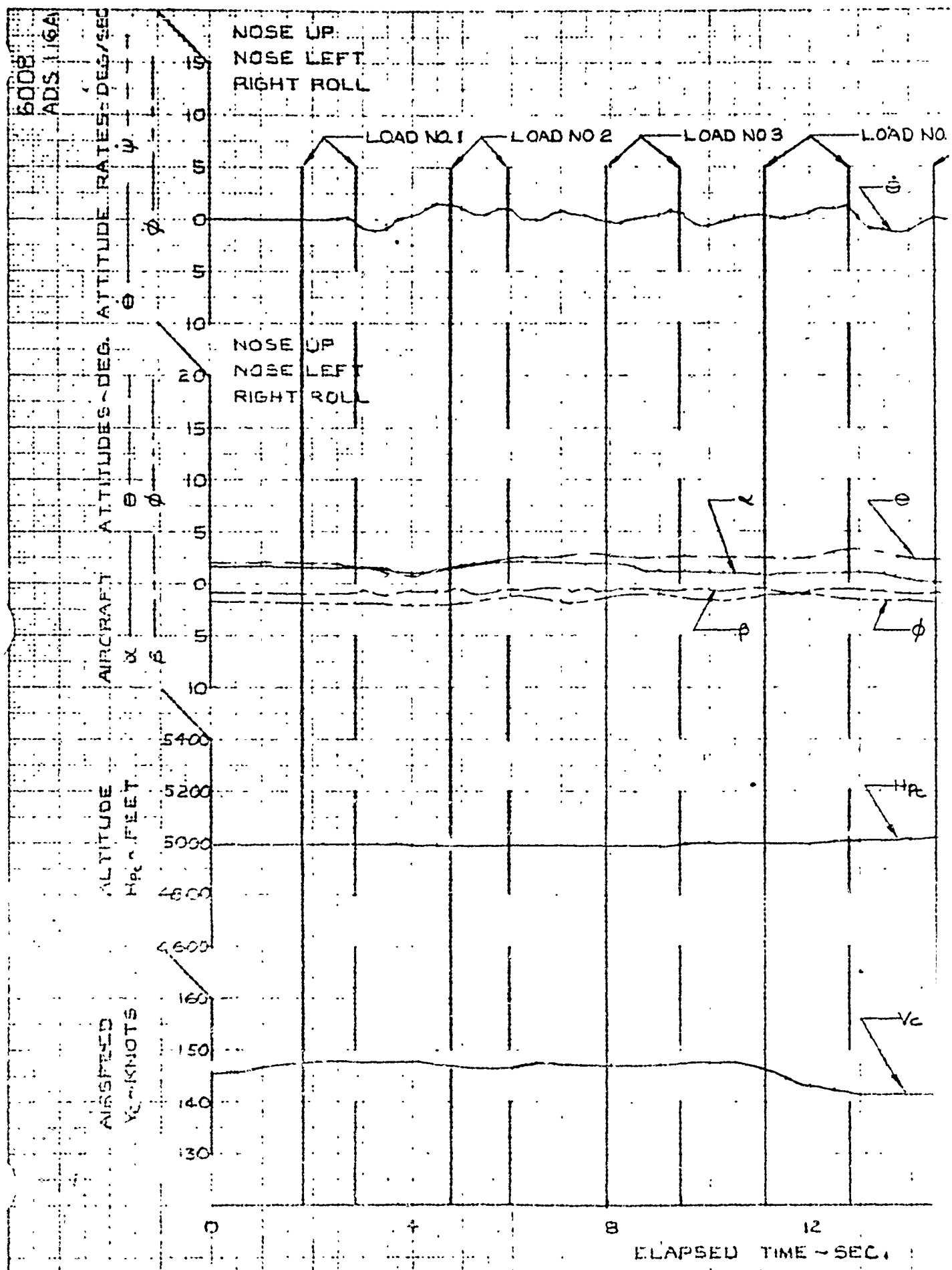
SEE FIGURE 6A SHEET 2 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.

FIGURE F-6N

VERTICAL STABILIZER NET LOADS
BENDING @ V59 345 ~ M_x
~ INCH-LBS X 10⁻⁶

6008
ADS106N



JOB NO. 65 SUB CODE 4.21



[illegible]

LOCKHART GEORGIA COMPANY

REPORT NO. ER 5473

MODEL C-141A

PAGE 1 F-57

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 7-12-65

FLIGHT 151

DROP NO. 4-2

SHEET 1 OF 2

CARGO WTS.

① 12150 LFS

~(2)10.490 LBS.

~E10.21QLAS

1-49.920 LBS

⑤ 2,710.135

~\$10,110 LES

~(7)E, 530 L E S

[illegible]

CARGO:

DESCRIPTION

1. TYPE CARRIER	4	PLATEFORM
2. LENGTH (IN)	96 96 96 96 96 96	
3. LONG CG. FS	1247 1127 985 866 757 645 537	
4. VERT. CG. WL	164 189 164 182 164 180 164	

EXTRACTION

CHUTE

אברהם בן יצחק

1. NO. OF FEETES	1	1	1	1	1	1
2. CABLE SIZE (FT)	22	22	22	22	22	22
3. CABLE POWER (WT)	1.4	1.4	1.4	1.4	1.4	1.4
4. EXT. LINE LENGTH	80'	80'	100'	100'	120'	120'

LOAD RELEASE;--TELLOAD CLEAR RAMP

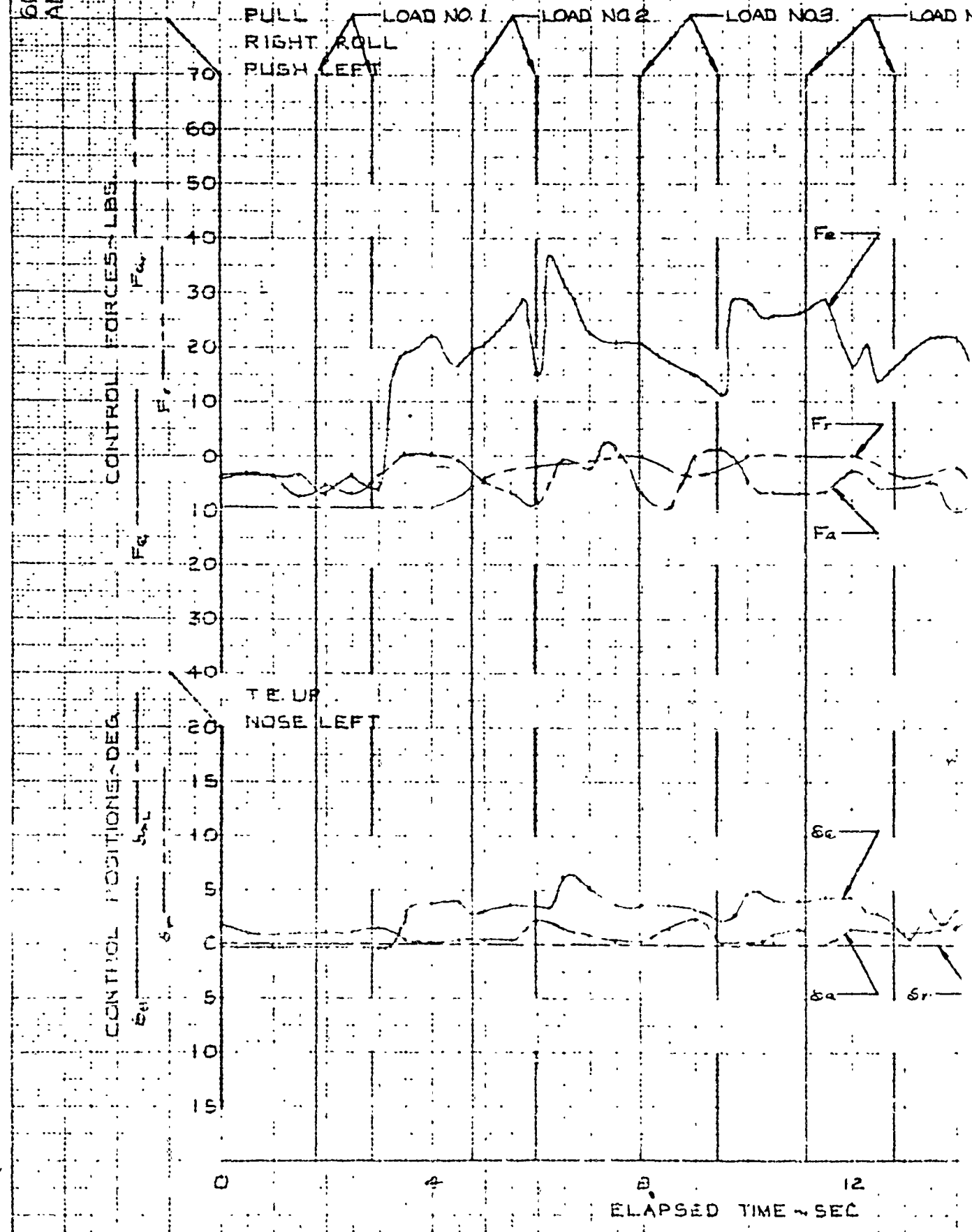
FIGURE F-7A

6003

ADS 112

REVISED 12-16-60
MBN

6003
ADS 116B



JOB NO. 63 SUB CODE - 4.21

MBH
7-15-65

CHECKED BY JWP

ER 5473
C-141A
F-58

TIME HISTORY OF AERIAL DELIVERY MANEUVER

AD NO. 4 LOAD NO. 5 LOAD NO. 6 LOAD NO. 7

AF63-8077

MODEL C-141A

LAC 6008

TEST DATE 7-12-65

FLIGHT 151

DROP NO. 42

SHEET 2 OF 7

CARGO WTS. ~①10,150 LBS.

~②10,490 LBS.

~③10,210 LBS.

~④9,920 LBS.

~⑤9,710 LBS.

~⑥10,110 LBS.

~⑦9,530 LBS.

NOTE:

SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION.

—— LOAD RELEASE
---- LOAD CLEAR RAMP

FIGURE F-7B

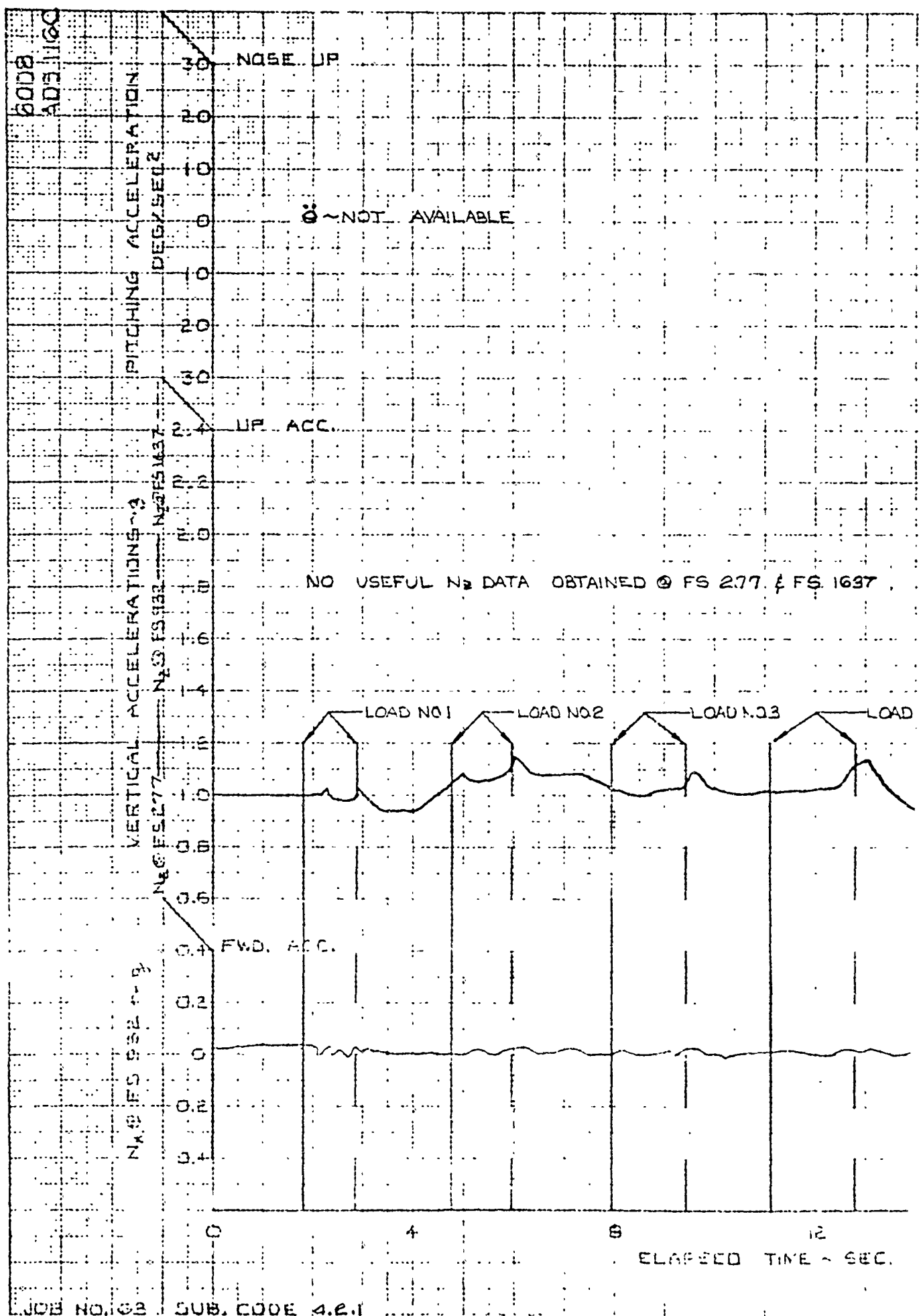
16

20

24

6003

ADS 116



PREPARED BY DTM/MBH

DATE 7-29-65

CHECKED BY JWP

LOCKHEED GEORGE COMPANY

AIR FORCE SYSTEMS AND MATERIALS RESEARCH

REPORT NO

ER 5473

MODEL

C-141A

PAGE

F-59

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-8077

LAC 6008

TEST DATE 7-12-65

FLIGHT 151

DROP NO. 42

SHEET 3 OF 7

CARGO WTS.

- ~ (1) 10,130 LBS.
- ~ (2) 10,490 LBS.
- ~ (3) 10,210 LBS.
- ~ (4) 9,820 LBS.
- ~ (5) 9,710 LBS.
- ~ (6) 10,110 LBS.
- ~ (7) 9,530 LBS.

NOTE:

SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO DESCRIPTION,
AND EXTRACTION CHUTE DESCRIPTION.

— LOAD RELEASE

- - - LOAD CLEAR RAMP

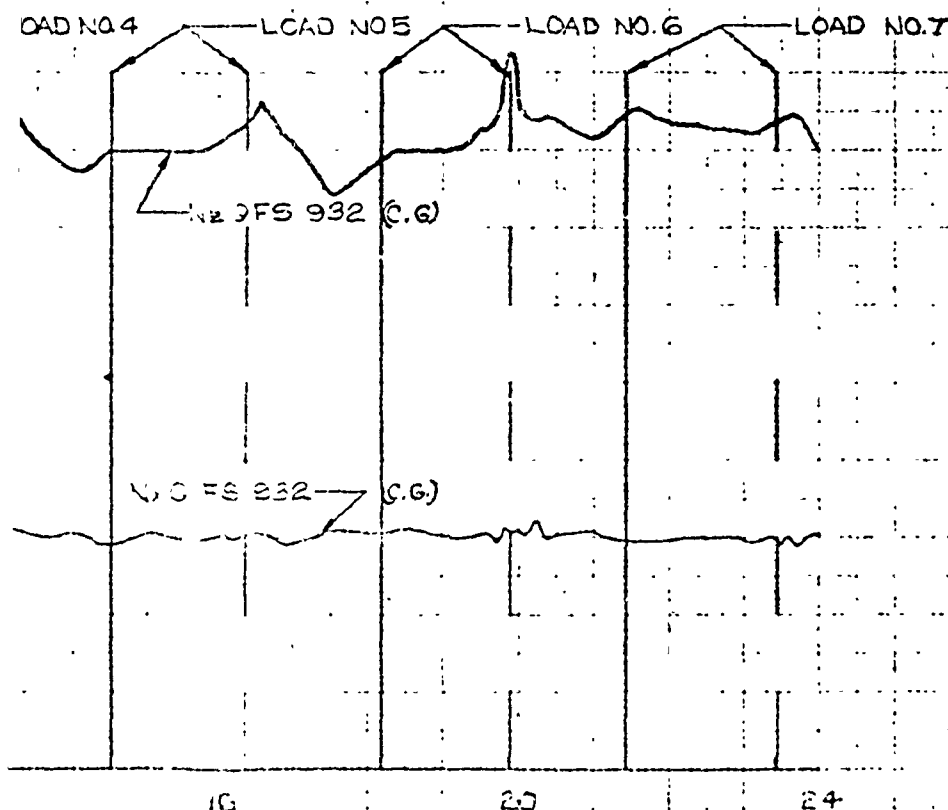
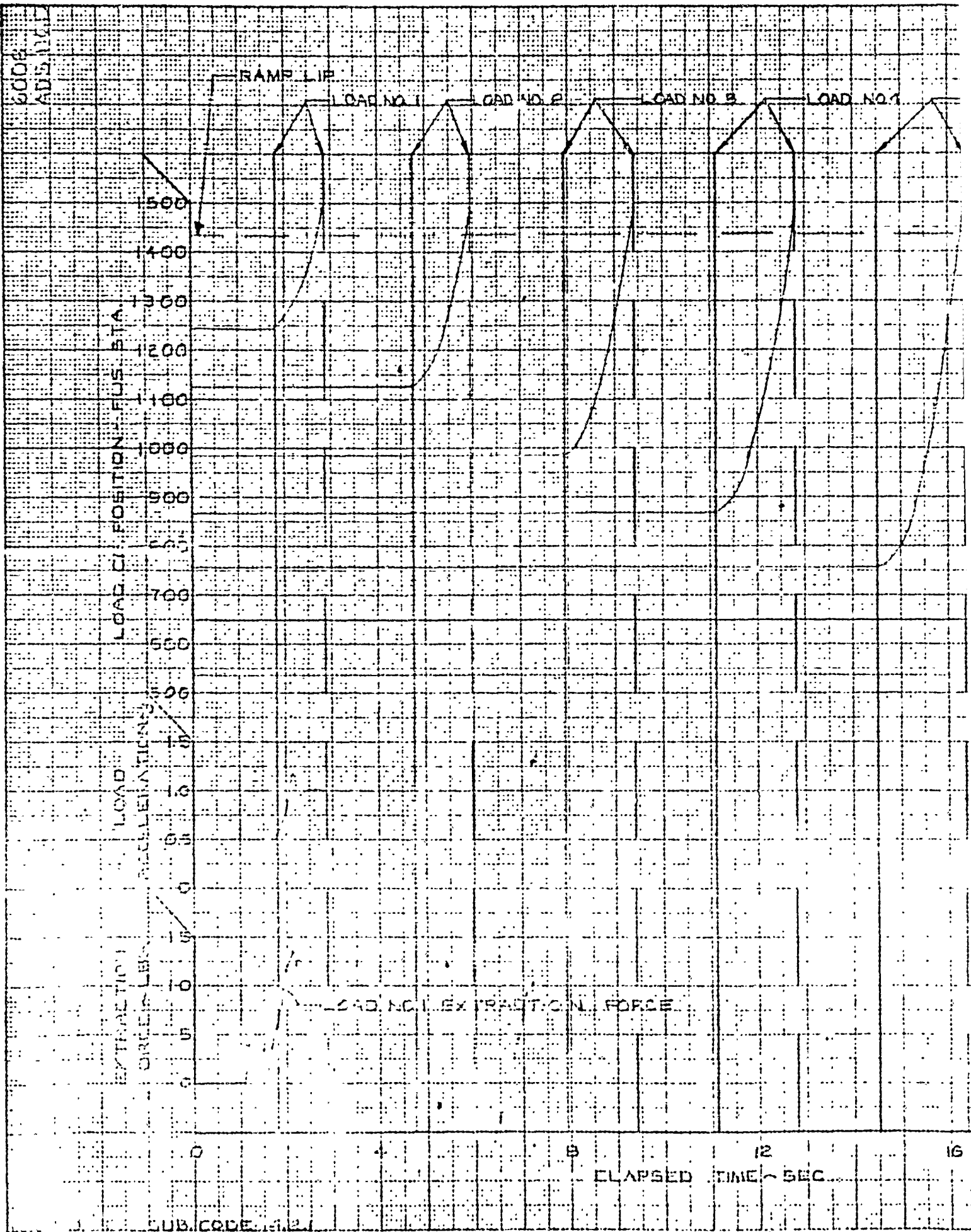


FIGURE F-7.C

6008

ACS 114

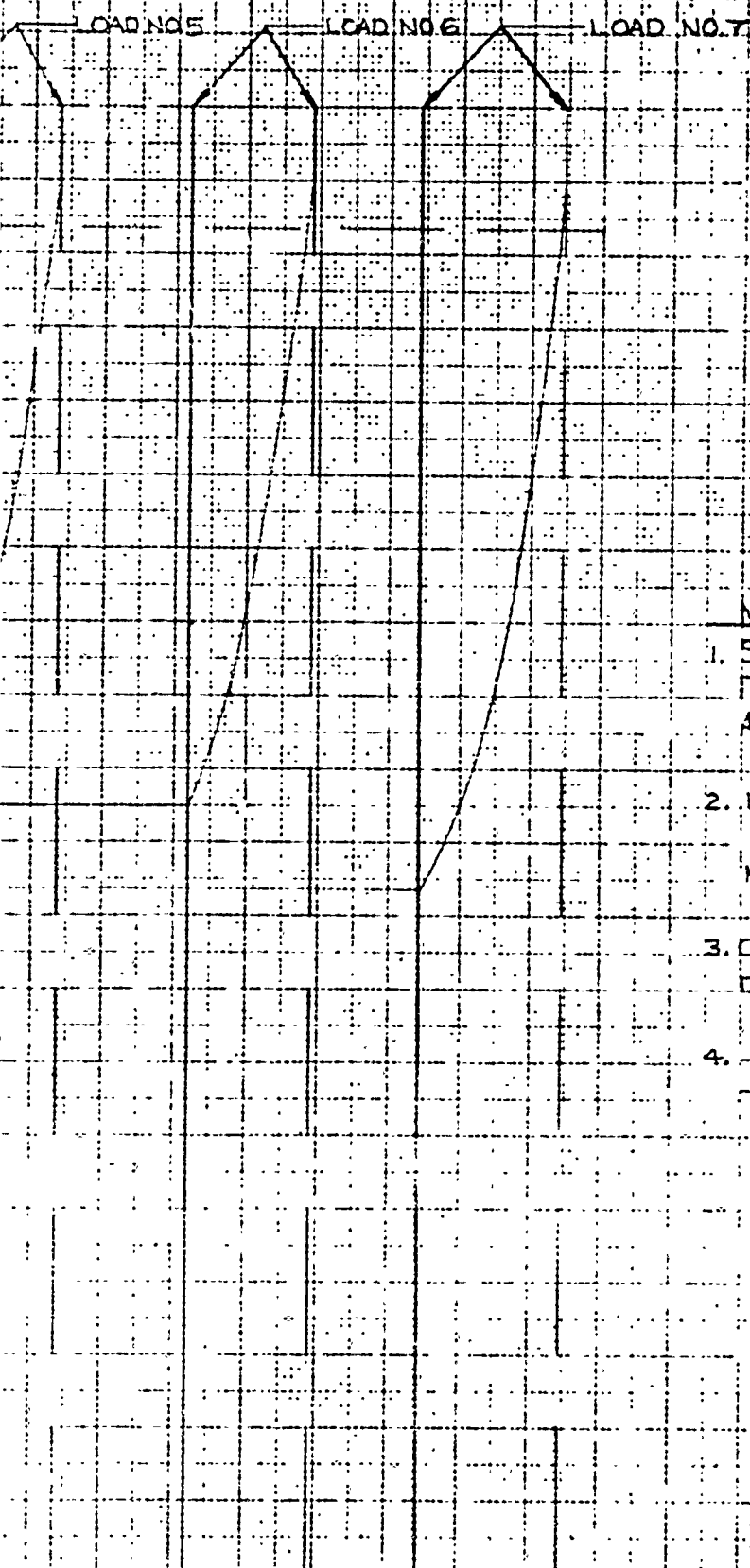


PREPARED BY DTM
DATE 7-29-65
CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141
PAGE 1-60

TIME HISTORY OF AERIAL DELIVERY MANEUVER



MODE C-141A
AEG3-B077
TEST DATE 7-12-65
FLIGHT 151
DROP NO. 42

SHEET 4 OF 7

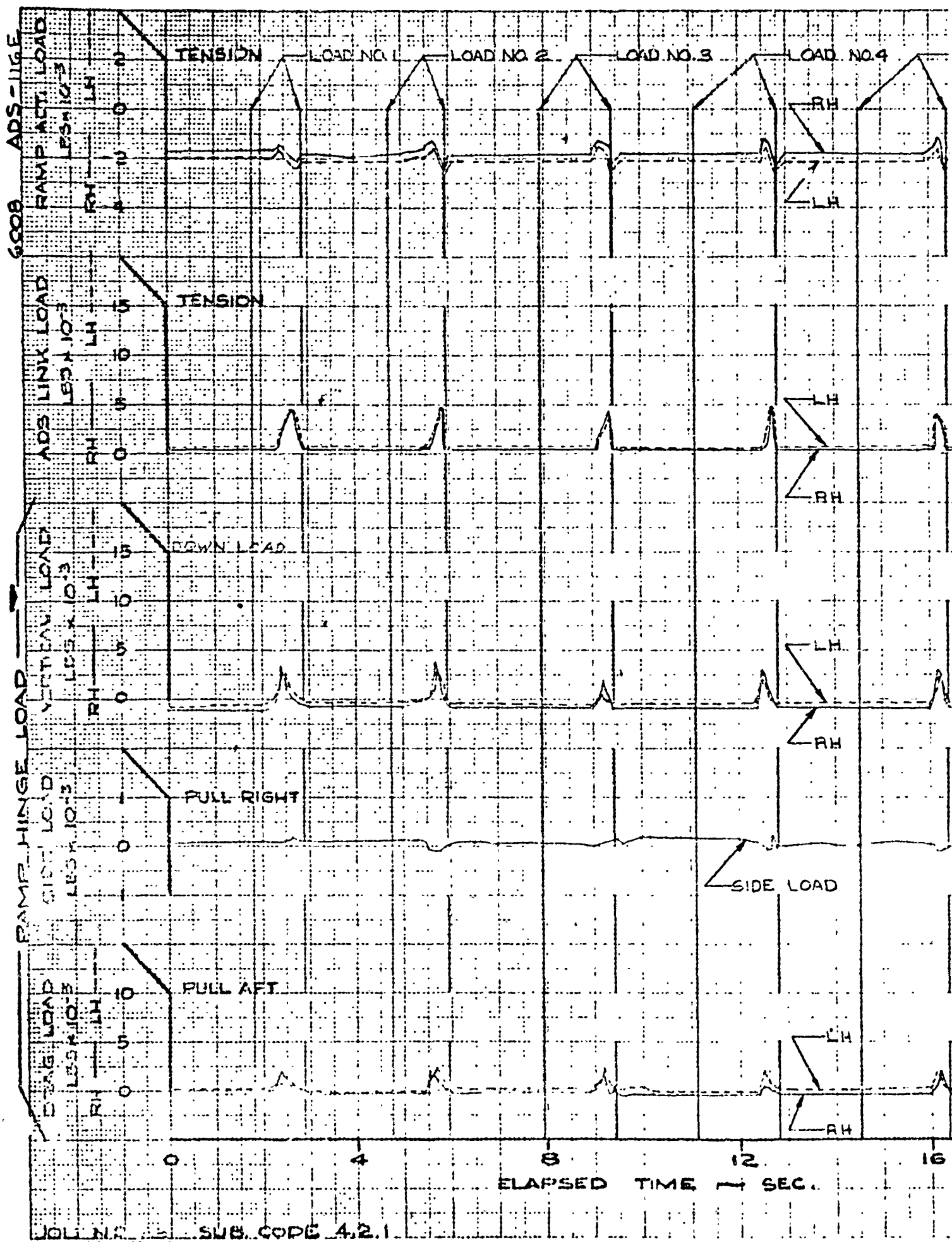
CARGO WTS. ~① 10,150 LBS
~② 10,490 LBS
~③ 10,210 LBS
~④ 9,920 LBS
~⑤ 9,710 LBS
~⑥ 10,110 LBS
~⑦ 9,530 LBS

NOTE:

1. SEE FIGURE E-7A SHEET 1 OF 7 FOR RUN CONDITIONS, CARGO DESCRIPTION, AND EXTRACTION CHUTE DESCRIPTION.
2. LOAD RELEASE POINT FOR LOAD NO. 5 IS ESTIMATED DUE TO INSTRUMENTATION MALFUNCTION.
3. CARGO N_x DATA AND EXTRACTION FORCE DATA NOT AVAILABLE FOR LOADS NO. 2-NO. 7
4. ——— LOAD RELEASE
- - - - - LOAD CLEAR OF RAMP

FIGURE F-7D

6008
ADS 1160



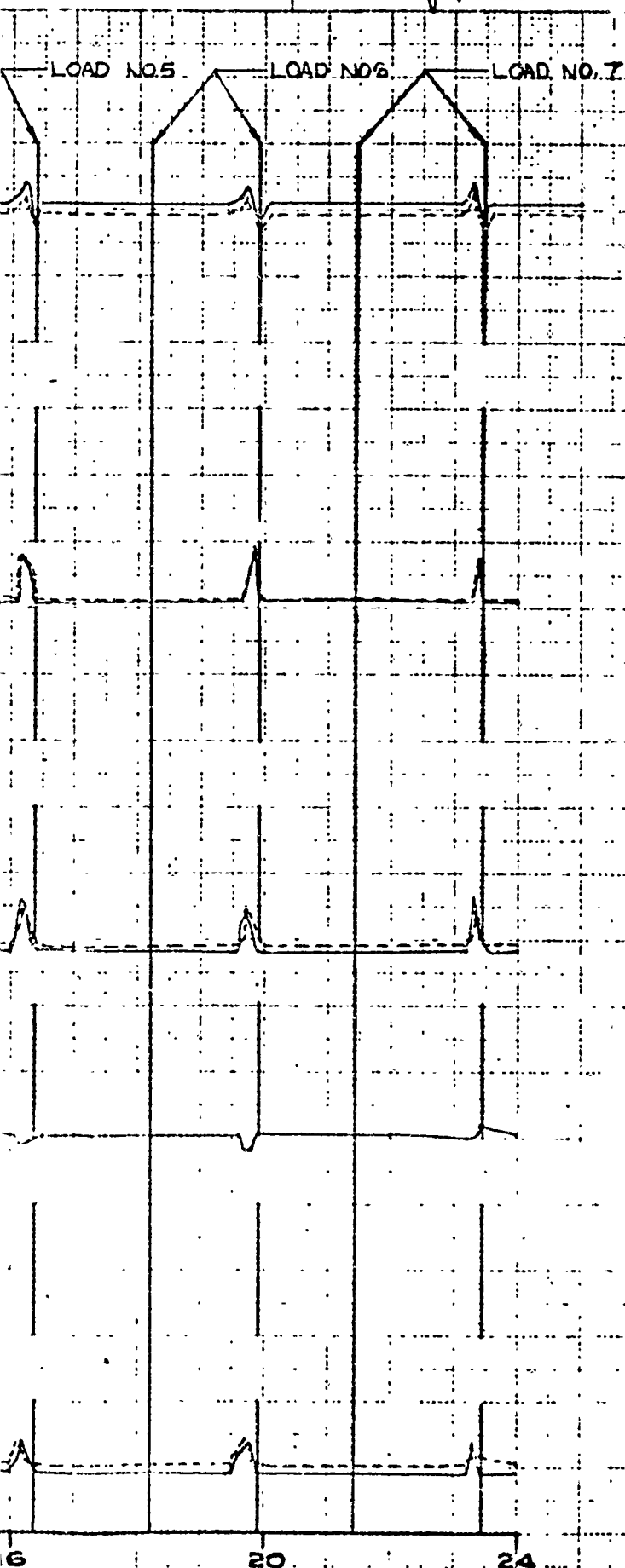
CHECKED BY. JWP

LOCKHEED-CROWLEY COMPANY

REPORT NO. ER-5473

MOORE - C-141A

PAGE --- F-61



TIME HISTORY OF AERIAL DELIVERY

MANEUVER

MODEL C-151A

AF 63-8077

LAC 8008

TEST DATE: 7-12-65

FLIGHT 151

PROE. NR 42

SHEET ' 5 of 7

CARGO WEIGHT: ~ ① 10,150 LBS
~ ② 10,990 LBS
~ ③ 10,210 LBS
~ ④ 9,920 LBS
~ ⑤ 9,710 LBS
~ ⑥ 10,110 LBS
~ ⑦ 9,530 LBS

NOTE :

SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

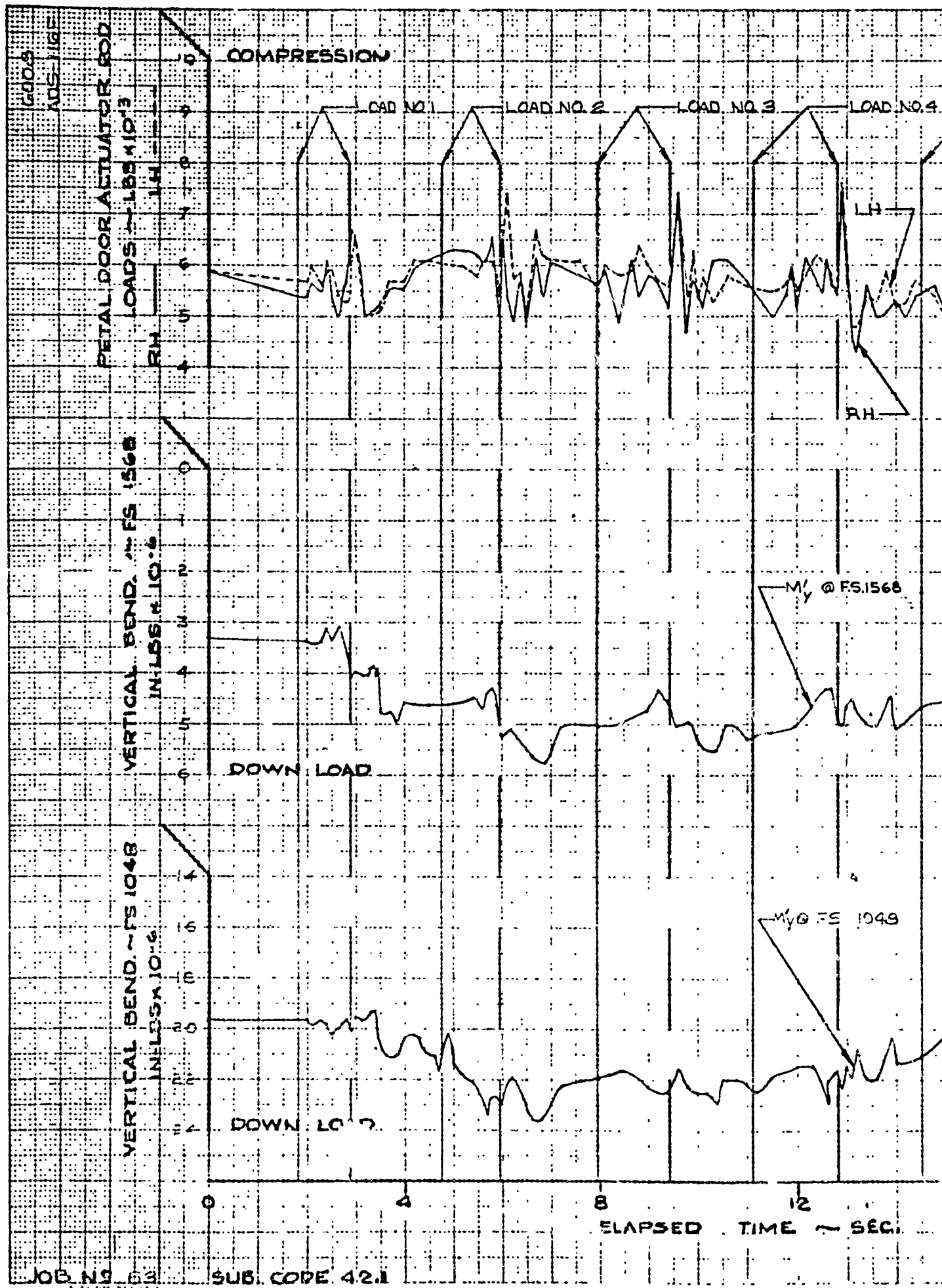
LOAD RELEASE

LOAD CLEAR RAMP

FIGURE E-7E

6002

ADSL-16.E



PREPARED BY: MORGAN, MARY

DATE: 7-14-65

CHECKED BY: *[Signature]*

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL: C-141A

PAGE: F-62

TIME HISTORY OF AERIAL DELIVERY

MANEUVER

MODEL: C-141A

AF 43-8077

LAC 4008

TEST DATE: 7-12-65

FLIGHT 151

DROP NO. 42

SHEET 6 OF 7

CARGO WEIGHT: ~ ① 10,150 LBS
 ~ ② 10,490 LBS
 ~ ③ 10,210 LBS
 ~ ④ 9,920 LBS
 ~ ⑤ 9,710 LBS
 ~ ⑥ 10,110 LBS
 ~ ⑦ 9,530 LBS

NOTE:

SEE FIGURE 7A SHEET 1 OF 7
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION

— LOAD RELEASE

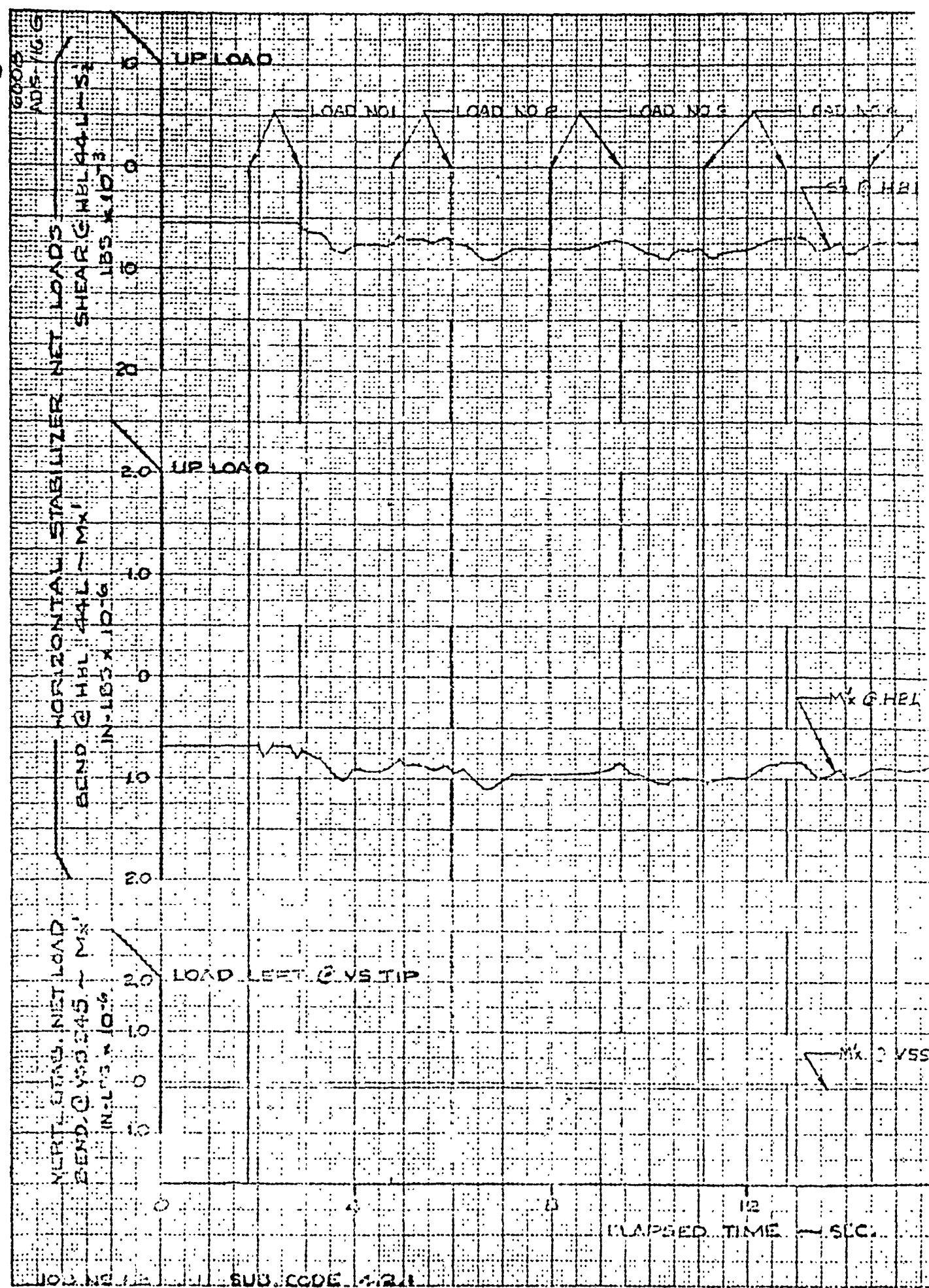
--- LOAD CLEAR RAMP



FIGURE F-7F

6008

ADS-11GF



PREPARED BY MORGAN

DATE 7-14-65

CHECKED BY JWP

LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. 5473

MODEL C-141A

PAGE F-63

TIME HISTORY OF AERIAL DELIVERY

MANEUVER

MODEL C-141A

AF 63-8017

LAC 6008

TEST DATE 7-12-65

FLIGHT 151

DROPS 42

SHEET 7 OF 7

CARGO WEIGHT 110,500 LB

1 10,450 LBS

2 10,210 LBS

3 9,920 LBS

4 9,710 LBS

5 10,110 LBS

6 9,550 LBS

NOTE 1

SEE FIGURE F-7A SHEET 1 OF 7
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

LOAD RELEASE

LOAD CLEAR RAMP

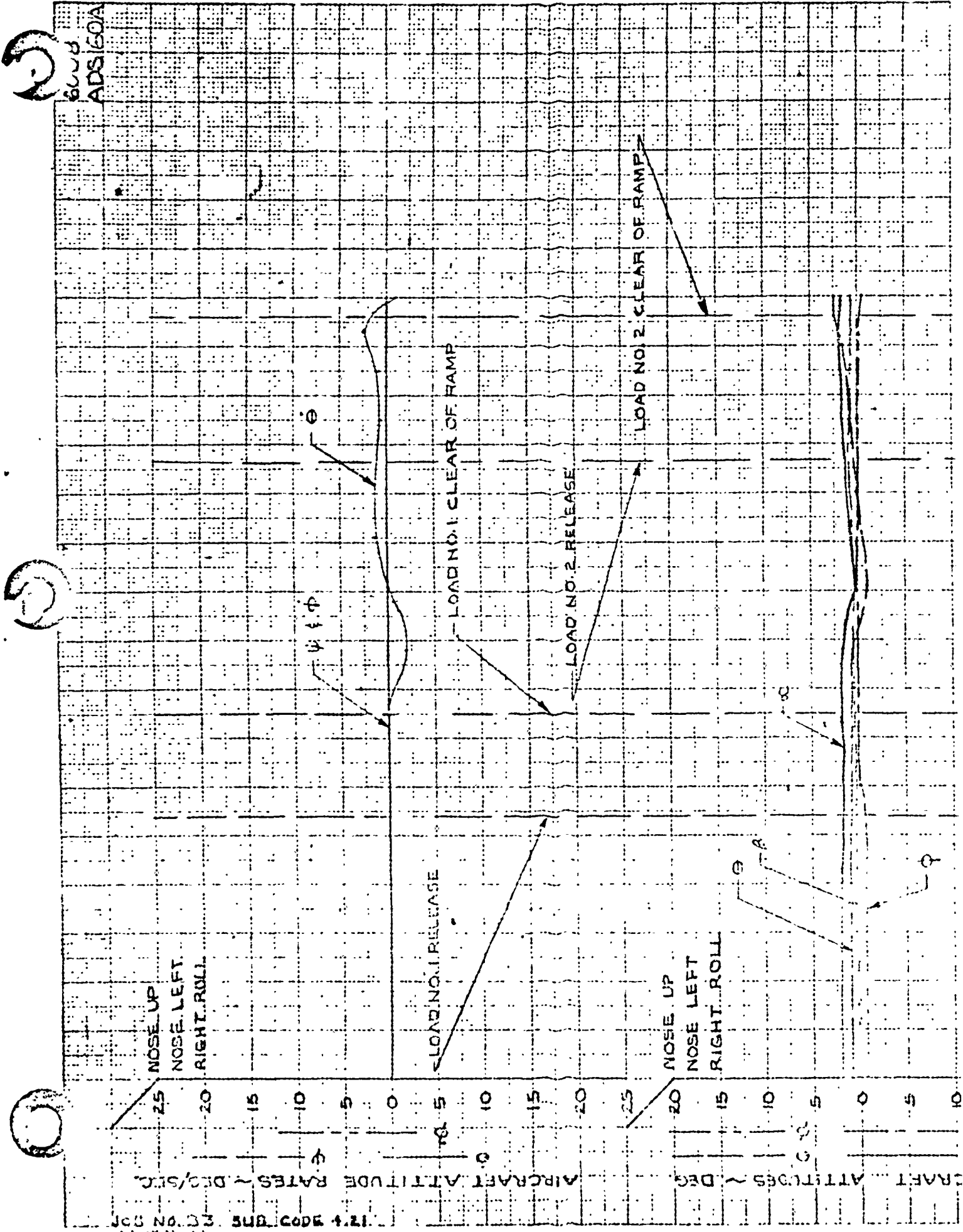
FIGURE F-7B

16

20

24

400



6000
ADS/GOA

420900 JUP

LAW OFFICE OF K. J. A. COMPANY

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

תל"ב-תל"ד נ"א

ER 5473

MODEL

C-141A

PAGE

F-64

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-HIA

AF638072

LAC. 6008

TEST DATE 9-8-45

FLIGHT 178

DROP NO. 43

SHEET 1 OF 14

CARGO WT@10.465 LBS.

② 35.025 LBS

RUN CONDITIONS

1. G.W. ~ ① 229, 100 LBS. ~ ② 210, 635 LBS
2. C.G. PRIOR TO DROP ① 33.7% ② 28.7%
3. C.G. AFTER DROP ① 28.7% ② 21.1%
4. FLAPS ~ 60%
5. GEAR ~ UP
6. AVG. EPR ~ 1.29 EPR
7. $\Delta H \sim 0.45''$ (A/C N.W.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM
2. LENGTH ~ ① 8 FT. ~ ② 24 FT.
3. CARGO, C.G. POSITIONS
LONG. ~ FS ① 122S ~ ② 104L
VERT. ~ WL ① 178 ~ ② 162

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES $\sim 1 \sim 2 \sim 2$
2. CHUTE SIZE $\sim 6 \sim 22$ FT $\sim 6 \sim 32$ FT
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH ~ 150 FT ~ 100 FT

FIGURE F-8A

600B

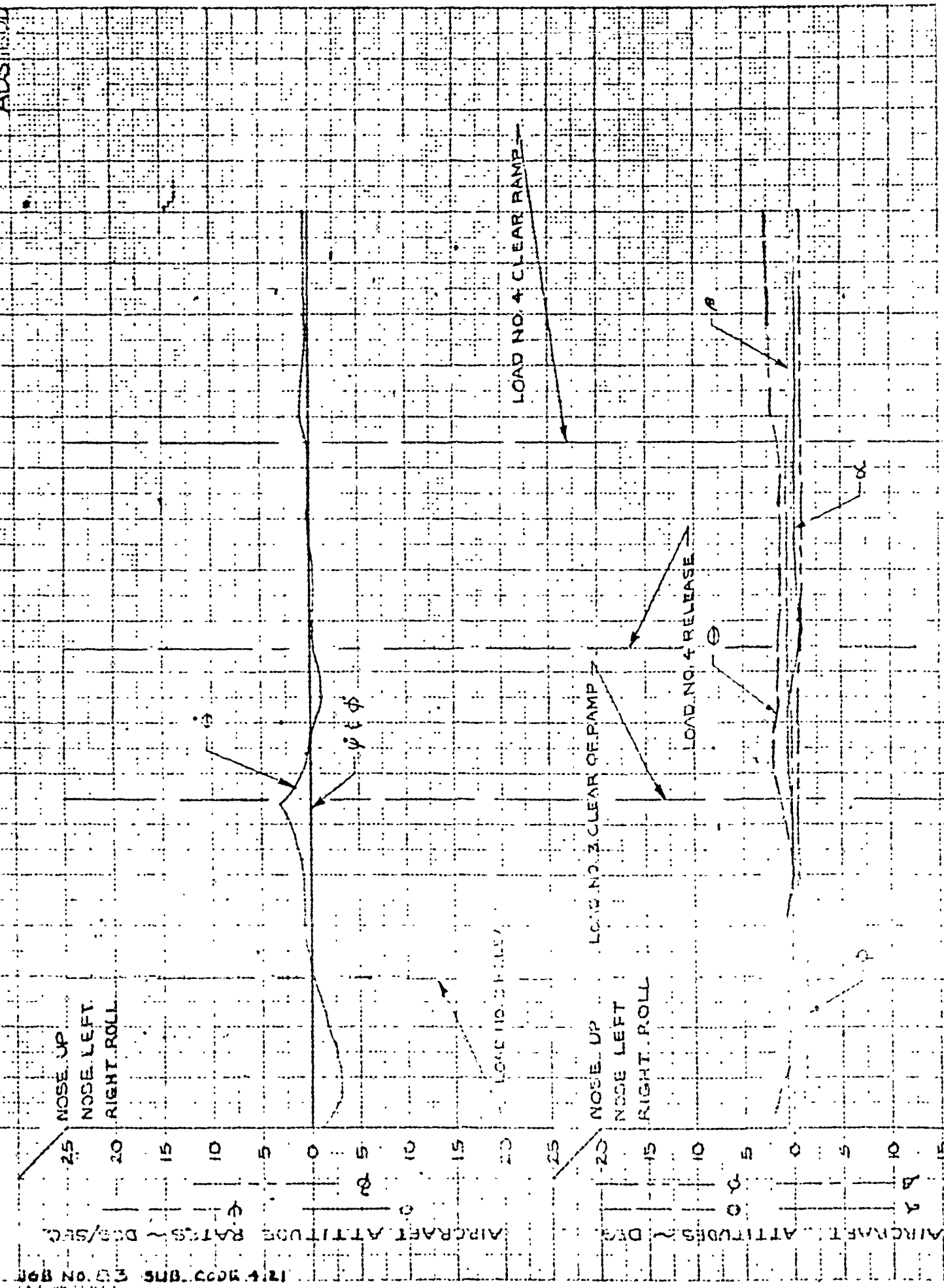
ADG 167A

REVISED 12-17-65

6003
ADS160B

6003
ADS160B

6003
ADS160B



6003
ADS160B

PREPARED BY JDG/MBH

DATE 9-8-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO. ER 5473

MODEL C-141A

PAGE F-65

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF638077

LAC. 6008

TEST DATE 9-8-65

FLIGHT 178

DROP NO. 43

SHEET 2 OF 14

CARGO WT 20,565 LBS.

@ 5055 LBS.

RUN CONDITIONS

1. G. W. ~ 163,610 LBS. @ 163.045 LBS.
2. C. G. PRIOR TO DROP 21.1% @ 26.6%
3. C. G. AFTER DROP 26.6% @ 30.0%
4. FLAPS ~ 60%
5. GEAR ~ UP.
6. AVG. EPR ~ 1.29 EPR.
7. $\alpha_H \sim 0.45^\circ$ (A/C N.U.)

CARGO DESCRIPTION

1. TYPE CARRIER ~ PLATFORM.
2. LENGTH ~ 16 FT. ~ 8 FT.
3. CARGO C.G. POSITIONS
LONG. ~ F3 ~ 795 ~ 648
VERT. ~ WL ~ 170 ~ 176

EXTRACTION CHUTE DESCRIPTION

1. NO. OF CHUTES ~ 1 ~ 1
2. CHUTE SIZE ~ 32 FT. ~ 15 FT.
3. RATED CHUTE FORCE/CARGO WT.
4. EXTRACTION LINE LENGTH 32 FT.
@ 120 FT.

FIGURE F-8B

ALTITUDE
Hc - FEET

AIR SPEED
Vc - KNOTS

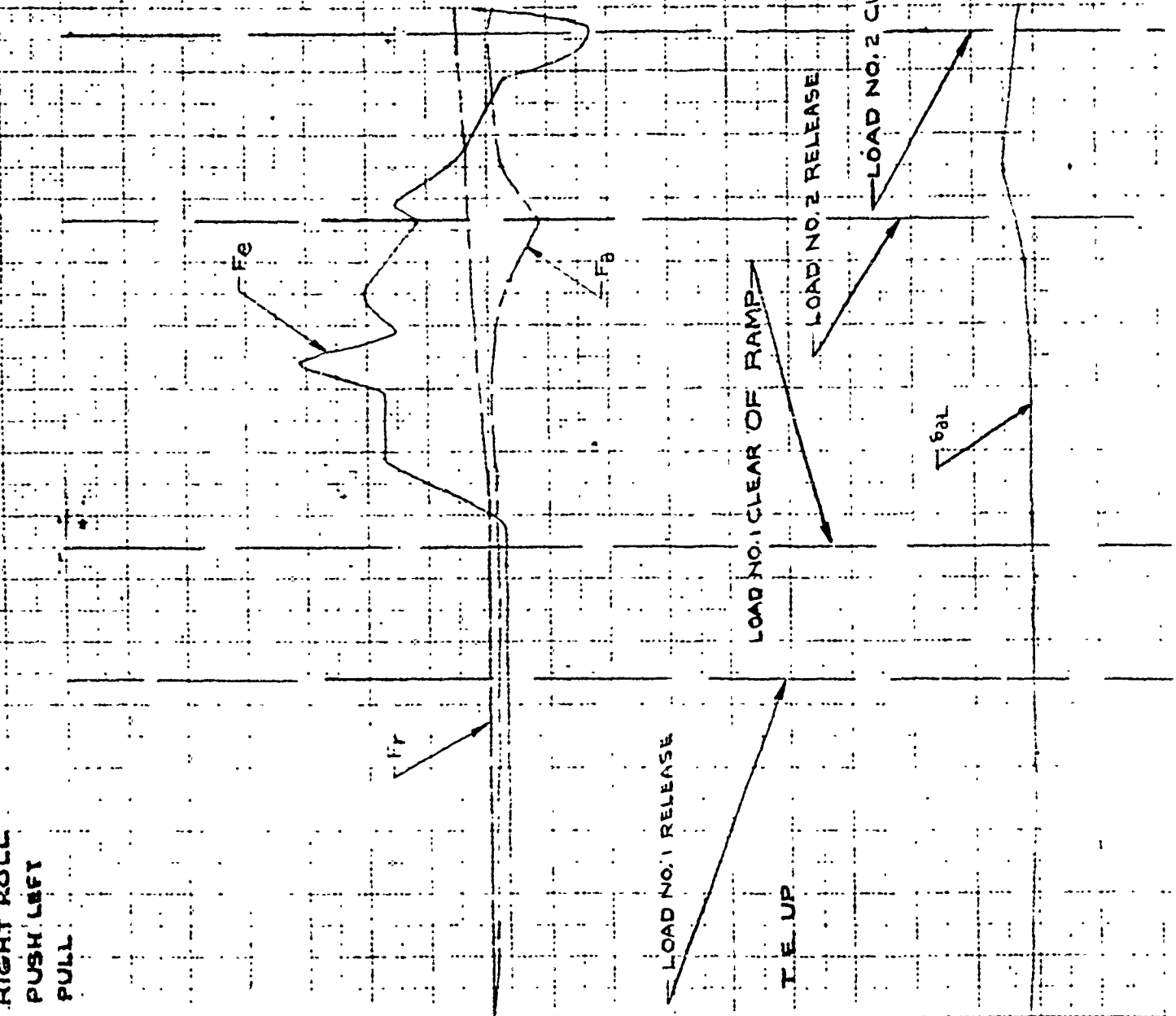
ELAPSED TIME ~ SEC

6008
ADS-1008
REVISED 12-17-65
MBH

6008
ADSIG00

RIGHT ROLL
PUSH LEFT
PULL

12.4 3400 800 4.21
NO. 03 800 12.4
CONTROL FORCES ~ LBS.
LEFT AILERON POSITION ~ DEG



EXPERIMENTAL JDG
DATE 9-9-65
JUP

ER 5473
C-141A
F-66

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 9-8-65

FLIGHT 178

DROP NO 43

SHEET 3 OF 14

CARGO WT. @ 10,465 LBS.
@ 35,025 LBS.

NOTE:

SEE FIGURE 8 SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

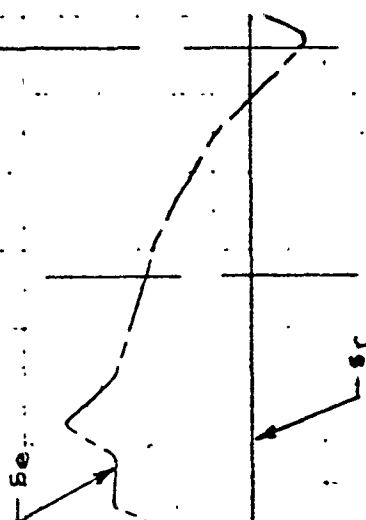
ELAPSED TIME ~ SEC

FIGURE F-8C

6008
ADS160C

T.E. LEFT
T.E. UP

RUDDER & ELEVATOR POSITIONS
DEGREES
8 6 4 2 0 2 4 6 8
Sr Se
LEFT



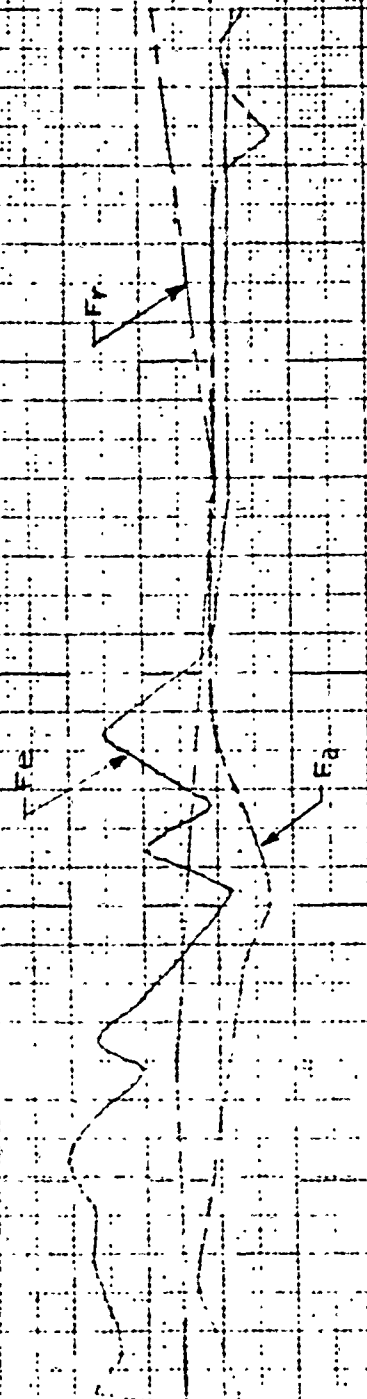
6003
ADS160D

RIGHT ROLL
PUSH LEFT
PULL

70
60
50
40
30
20
10
0
10
20
30
40
50
60
70

CONTROL FORCES ~ LBS.

JOB NO. F3 SUB. CODE 4.21

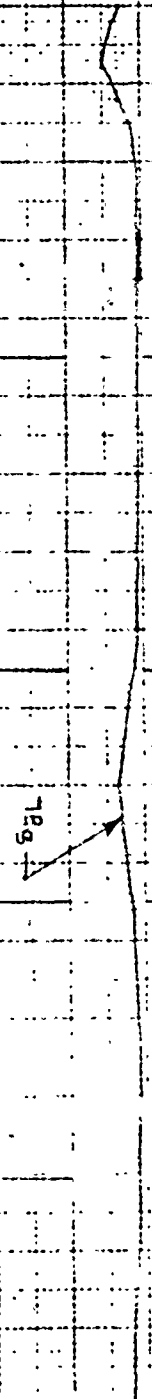


NO. 4 LOAD CLEAR OF RAMP

NO. 1 LOAD RELEASE

T.E. UP

20
15
10
5
0
5
10
15
20



NO. 2 LOAD RELEASE

PREPARED BY JOG

DATE 9-9-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473
MODEL C-141A
PAGE F-67

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63 8077

LAC 6008

TEST DATE 9-8-65

FLIGHT 178

DROP NO 43

SHEET 4 OF 14

CARGO WT 20,565 LBS
8,055 LBS.

NOTE:

SEE FIGURE 8 SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

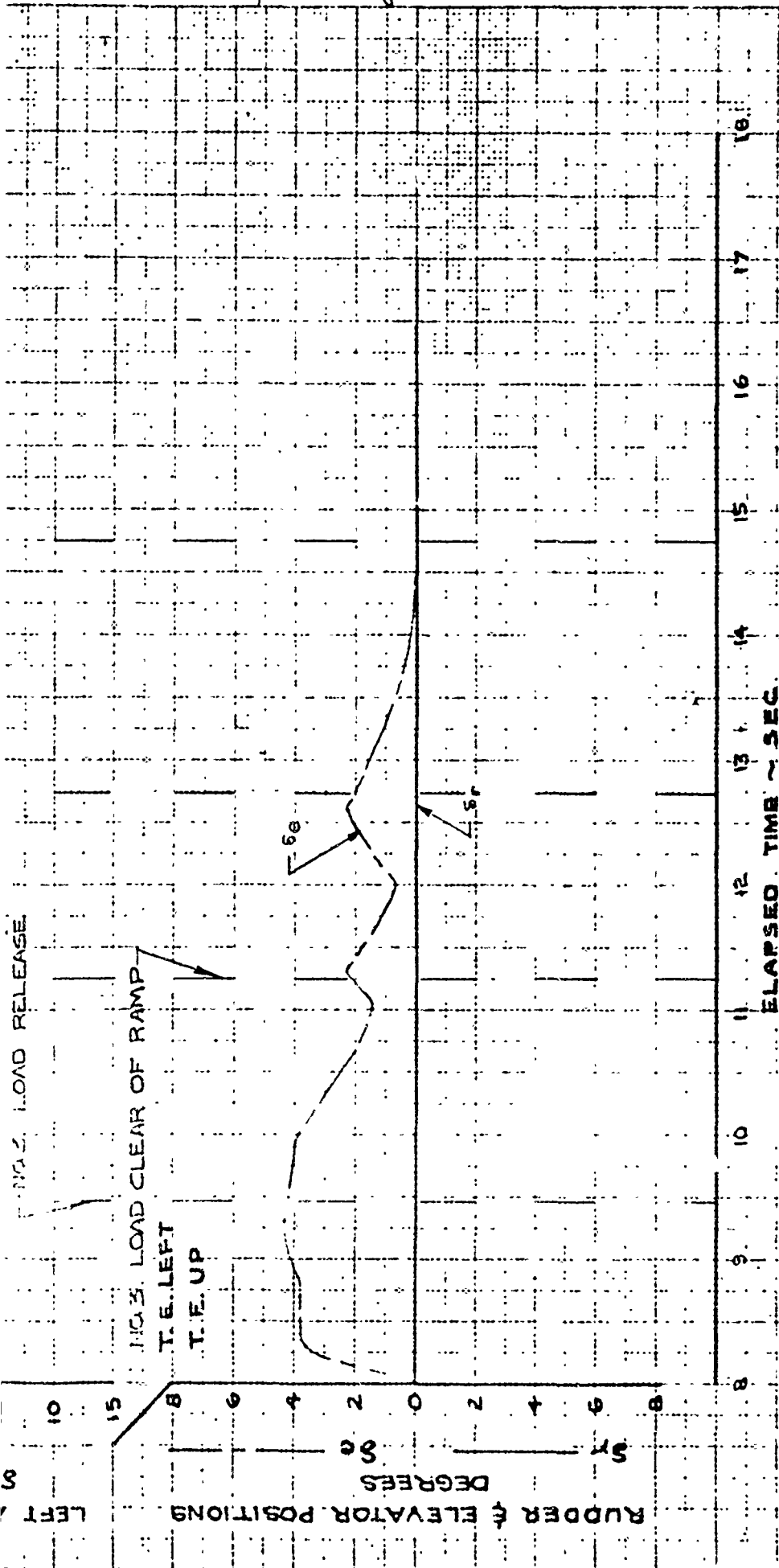
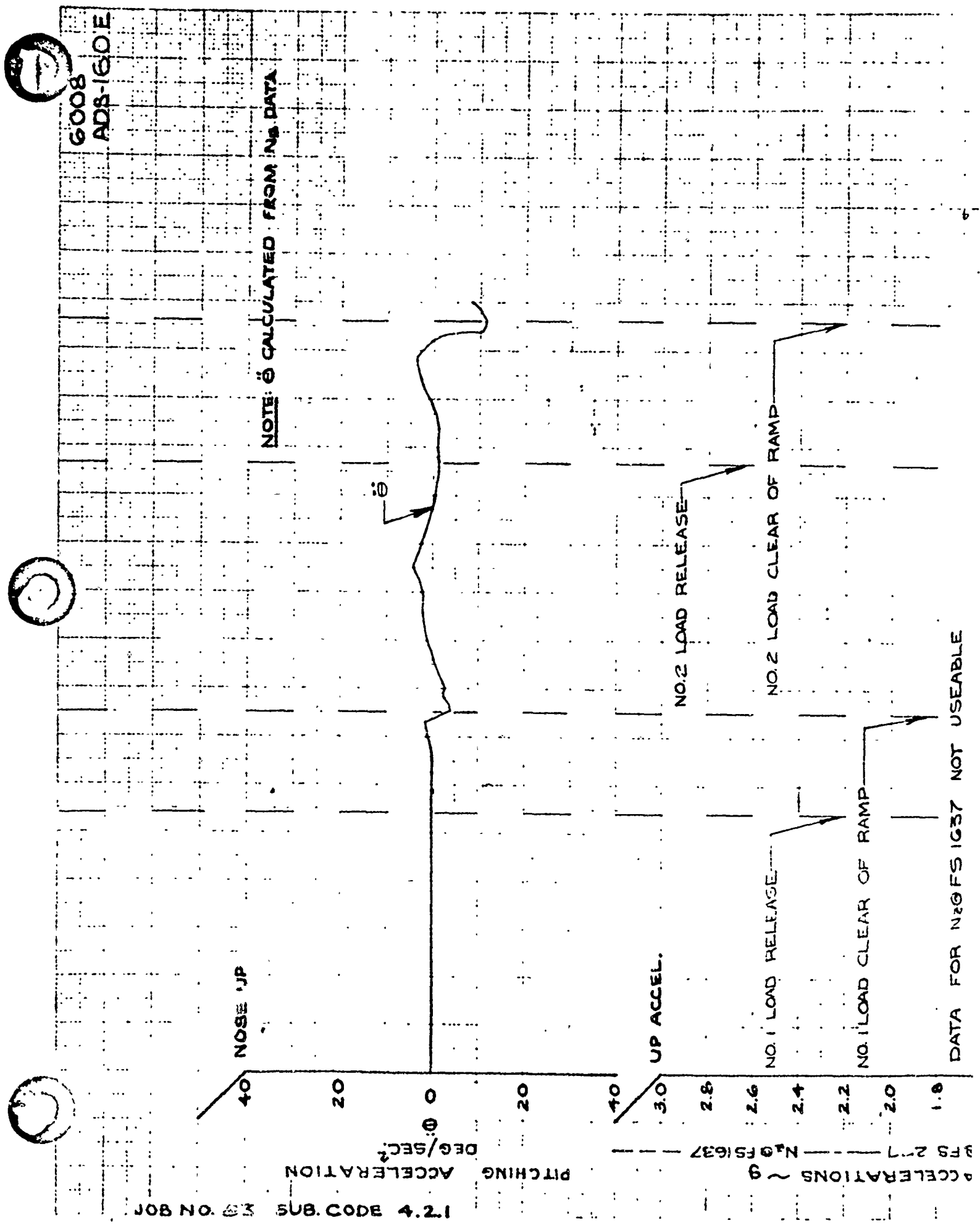


FIGURE F-8D

8008
ADS 1600



17.4. SUB. CODE 4.2.1

ACCELERATIONS ~ 9

N₂GFS1637

PITCHING ACCELERATION

DEG/SEC²

NOSE UP

UP ACCEL.

NO.1 LOAD RELEASE

NO.1 LOAD CLEAR OF RAMP

NO.2 LOAD RELEASE

NO.2 LOAD CLEAR OF RAMP

DATA FOR N₂GFS1637 NOT USEABLE

MBH
9-9-65
HND

ER 5473
C-141A
F-68

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AF 63-8077

LAC 6008

TEST DATE: 9-8-65

FLIGHT 178

DROP NO. 4-3

SHEET 5 OF 14

CARGO WT @ 10465 LBS.
@ 35,065 LBS.

NOTE:

SEE FIGURE F-8 SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

DATA FOR N2 @ FS 1637 NOT USEABLE

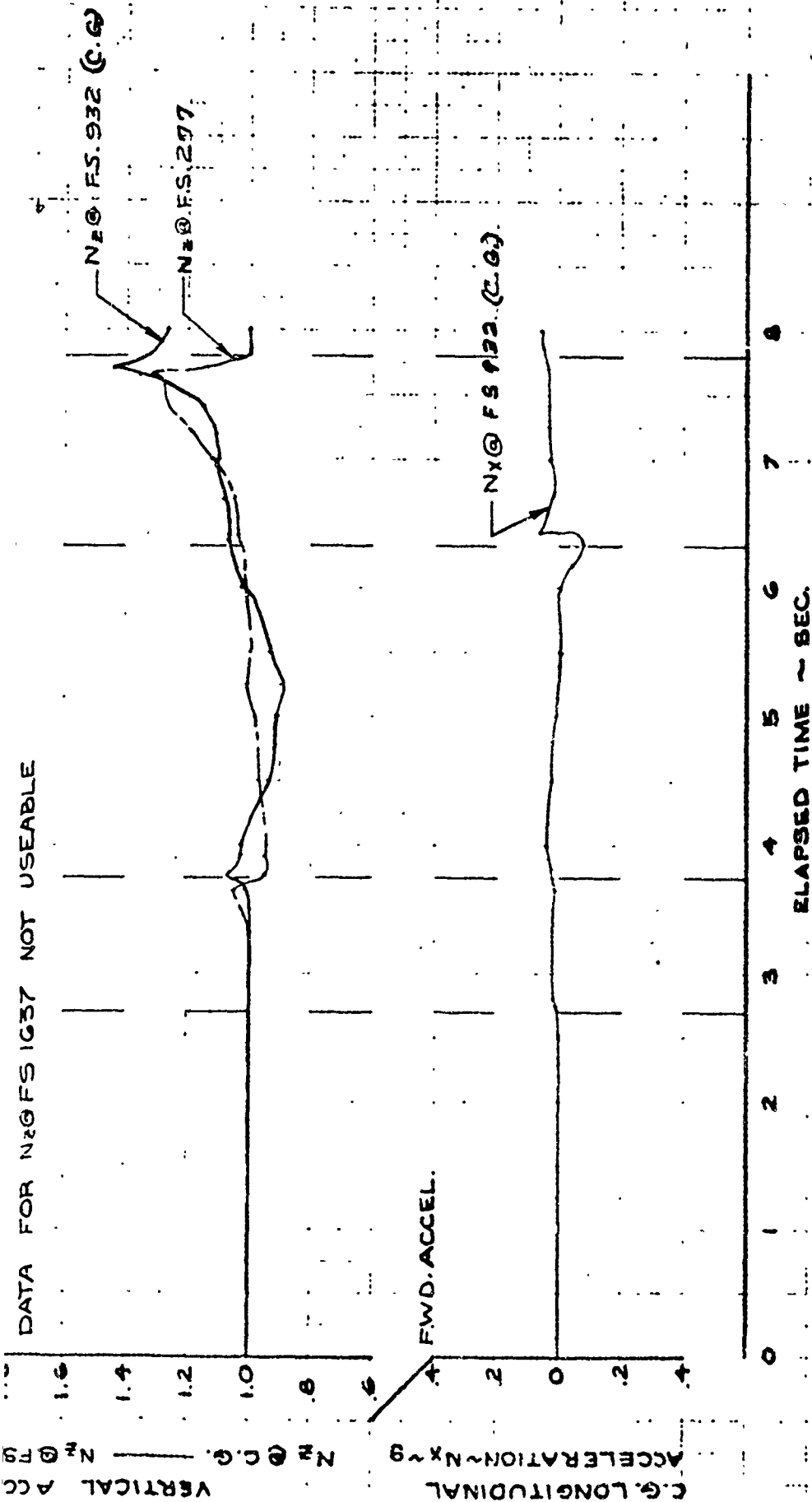


FIGURE F-8 E

6008
ADS-160 E

PITCHING ACCELERATION

DEG/SEC²

ERATIONS ~ 9

77

NO. 9 FS 1637

NOSE UP

UP ACCEL.

NO. 3 LOAD RELEASE

NO. 3 LOAD CLEAR OF RAMP

NO. 4 LOAD RELEASE

NO. 4 LOAD CLEAR OF RAMP

NOTE: $\ddot{\theta}$ CALCULATED FROM NA DATA

$\ddot{\theta}$

6008
ADB-160.F

MBH
9-9-65
JEP

ER 5473
C-141A
F-69

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C141A

AFG3-8077

LAC 6008

TEST DATE: 9-9-65

FLIGHT 178

DROP NO. 43

SHEET 6 OF 14

CARGO WT. 20,565 LBS.
⊕ 5,055 LBS.

NOTE:
SEE FIGURE F-8B SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

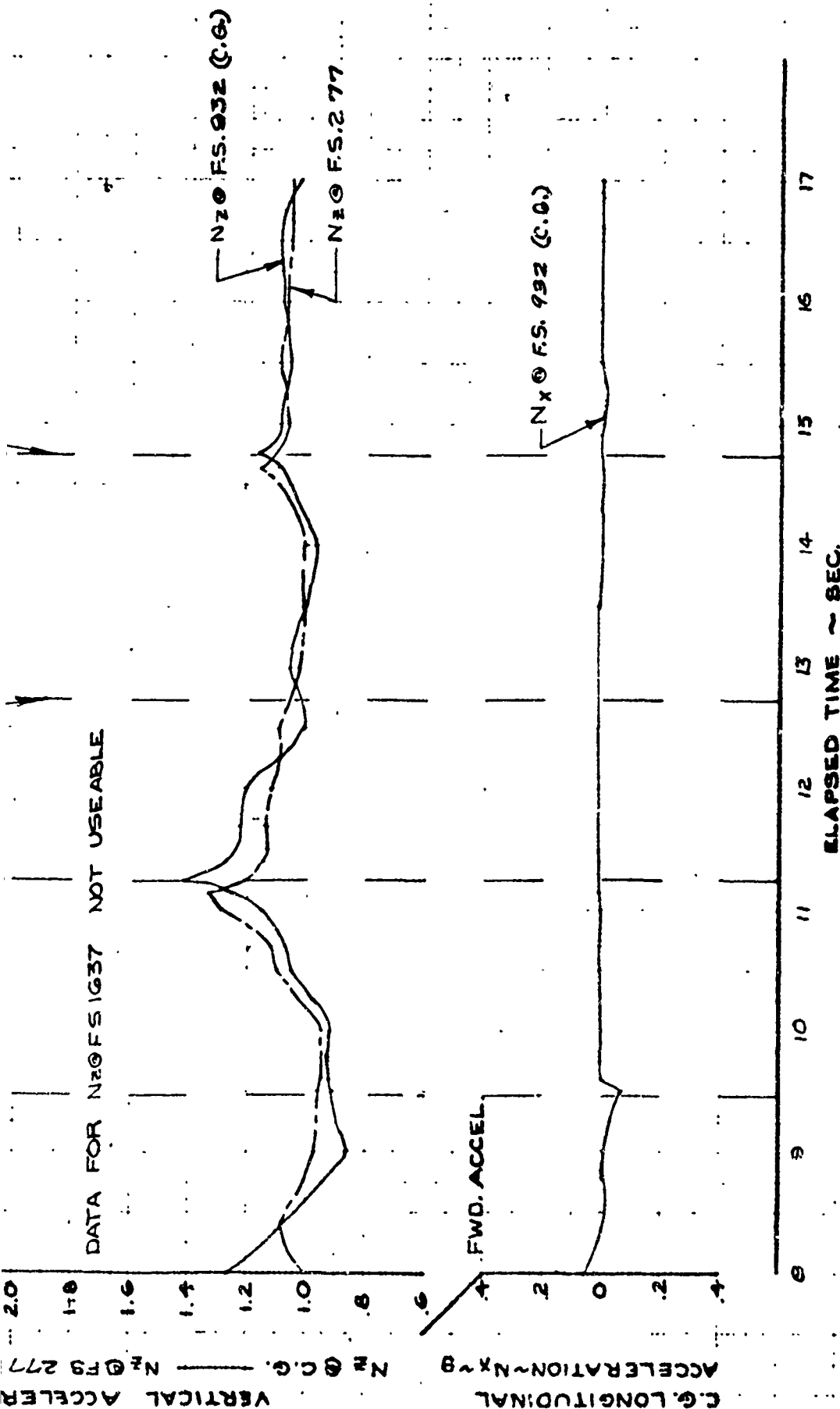


FIGURE F-8 F

6008
ADS-160 F

6008
ADS1608

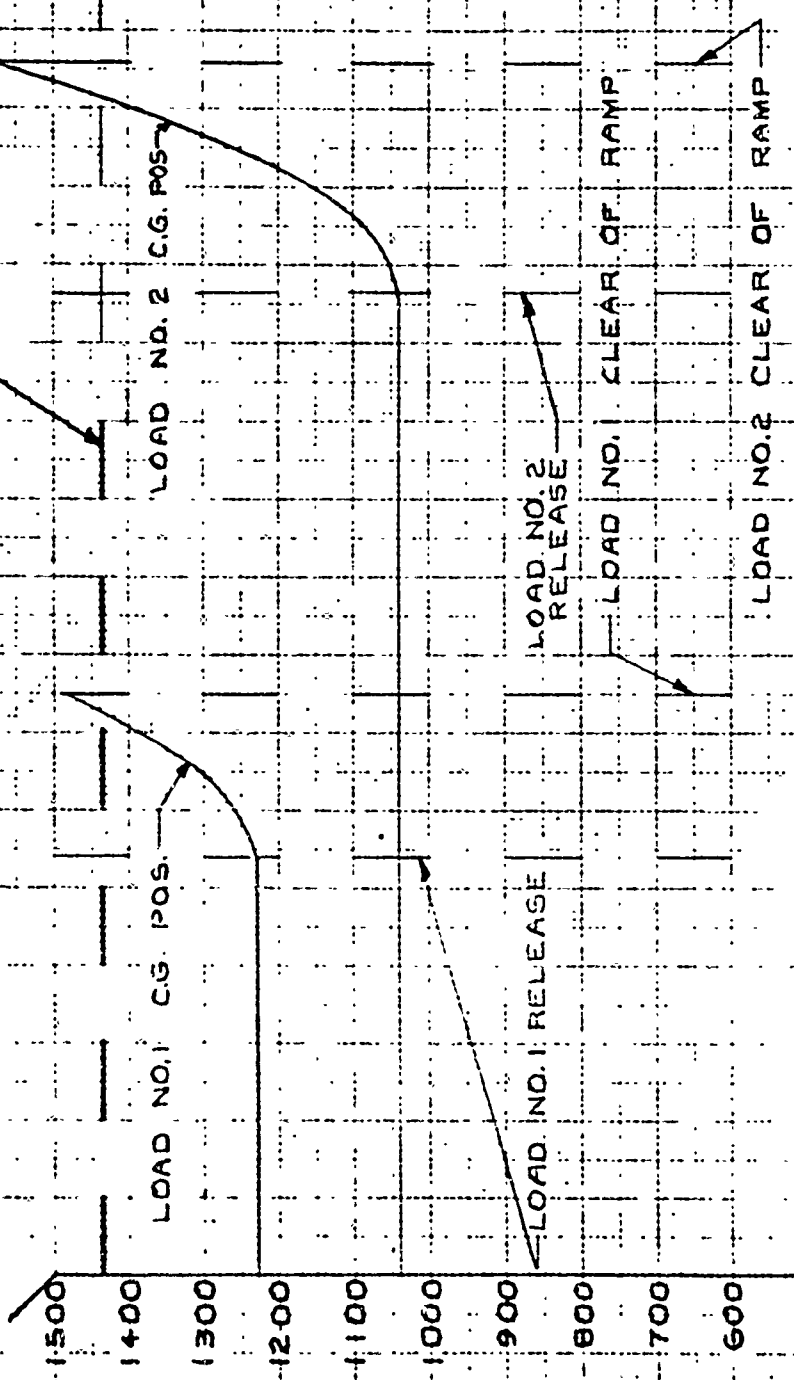


JOB NO 83 UB CODE 42

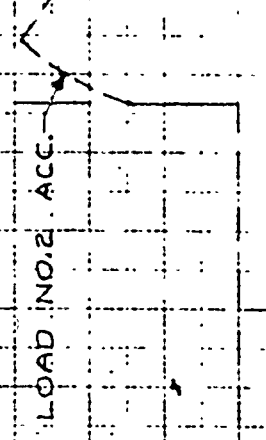
LOAD C.G. POSITION ~ FUS. STA.

LOAD ACCELERATION

g's



NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA



PREPARED BY JGG

DATE 9-9-65

CHECKED BY JWP

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO ER 5473

MODEL C-141A

PAGE F-70

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE 28-65

FLIGHT 178

DROP NO. 43

SHEET 7 OF 14

CARGO WT @ 10,465 LBS.
@ 35,025 LBS.

NOTE:

SEE FIGURE 8 AS SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

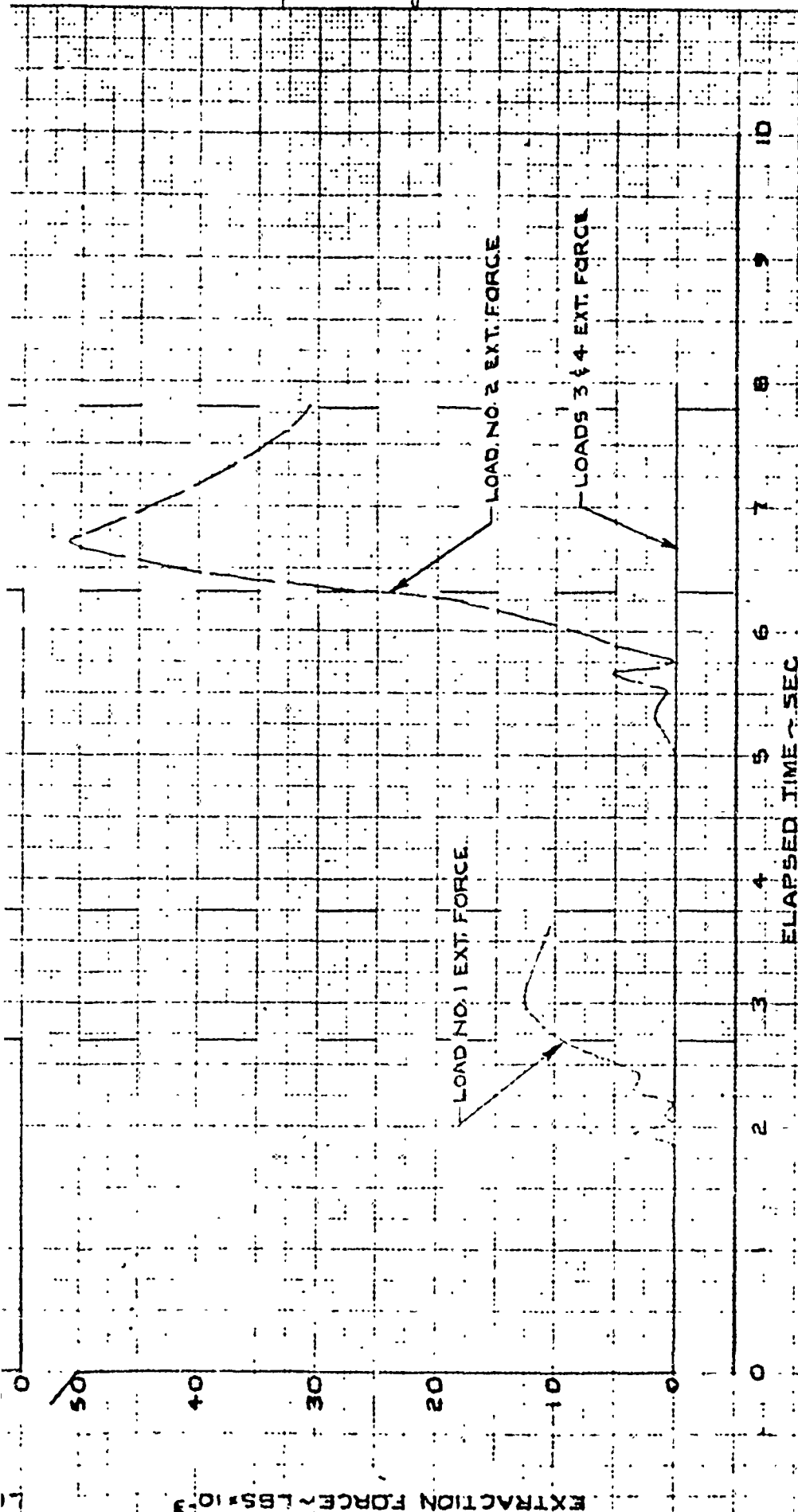


FIGURE F-8G

6008
ADS-160G



6008
ADS 160H



NOB NO 83

SUB CODE 4.2

LOAD C.G. POSITION - FUS. STA.

LOAD ACCELERATION

g's

RAMP LIP

NO. 3 LOAD C.G. POS.

NO. 4 LOAD C.G. POS.

NO. 3 LOAD RELEASE

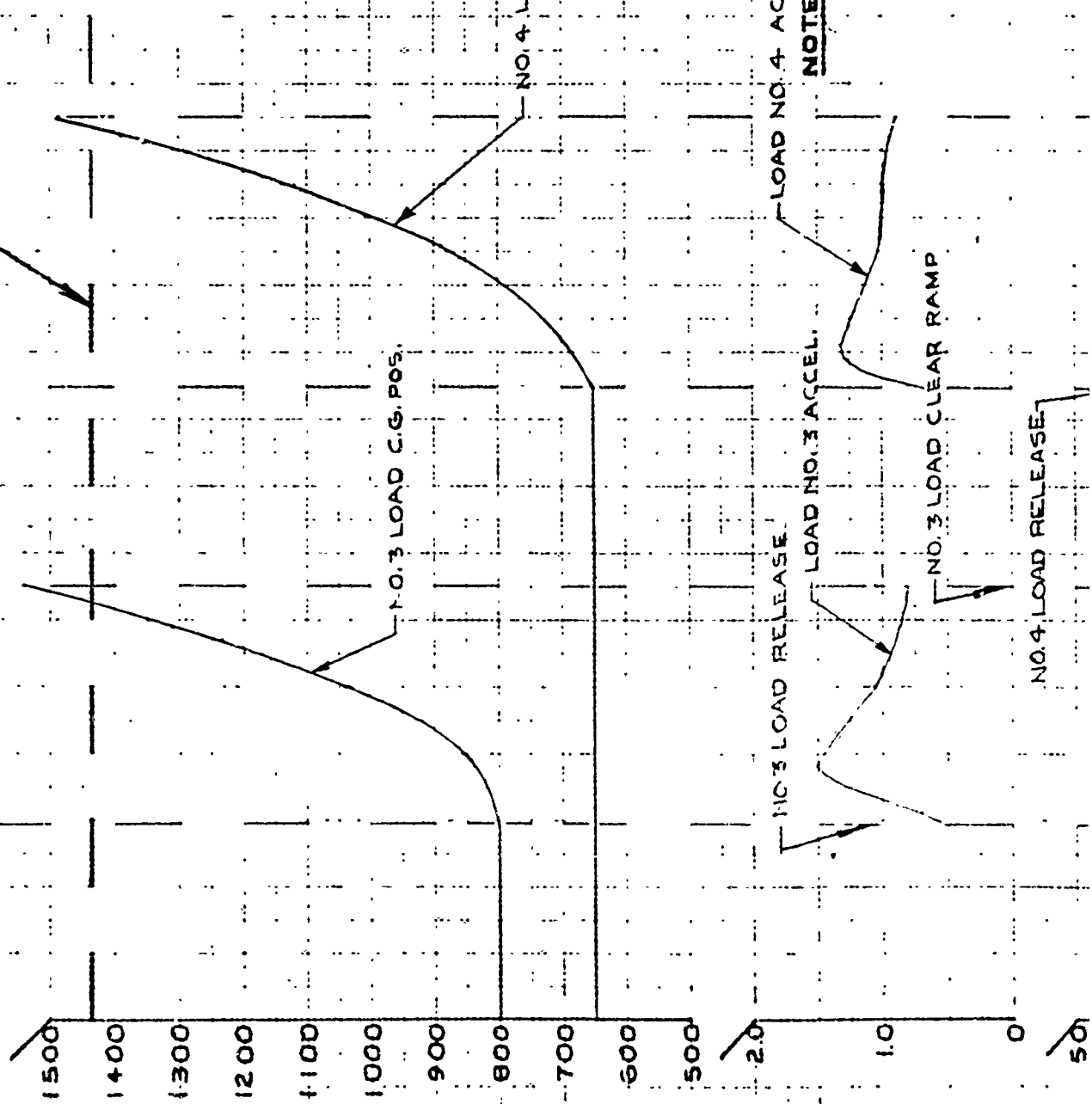
LOAD NO. 3 ACCEL.

LOAD NO. 4 ACCEL.

NOTE: LOAD ACCELERATION CALCULATED FROM EXTRACTION FORCE DATA.

NO. 3 LOAD CLEAR RAMP

NO. 4 LOAD RELEASE



PREPARED BY JDO
DATE 9-9-65
CHECKED BY *[Signature]*

U.S. AIR FORCE
AERONAUTICAL ENGINEERING
AERONAUTICAL ENGINEERING

REPORT NO. ER. 5473
MODEL C-141A
PAGE F-71

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077 LAC 6008
TEST DATE 9-8-65
FLIGHT 178 DROP NO. 43

SHEET 8 OF 14

CARGO WTS. ③ 20,565 LBS
④ 5,055 LBS

NOTE:
SEE FIGURE 8, SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

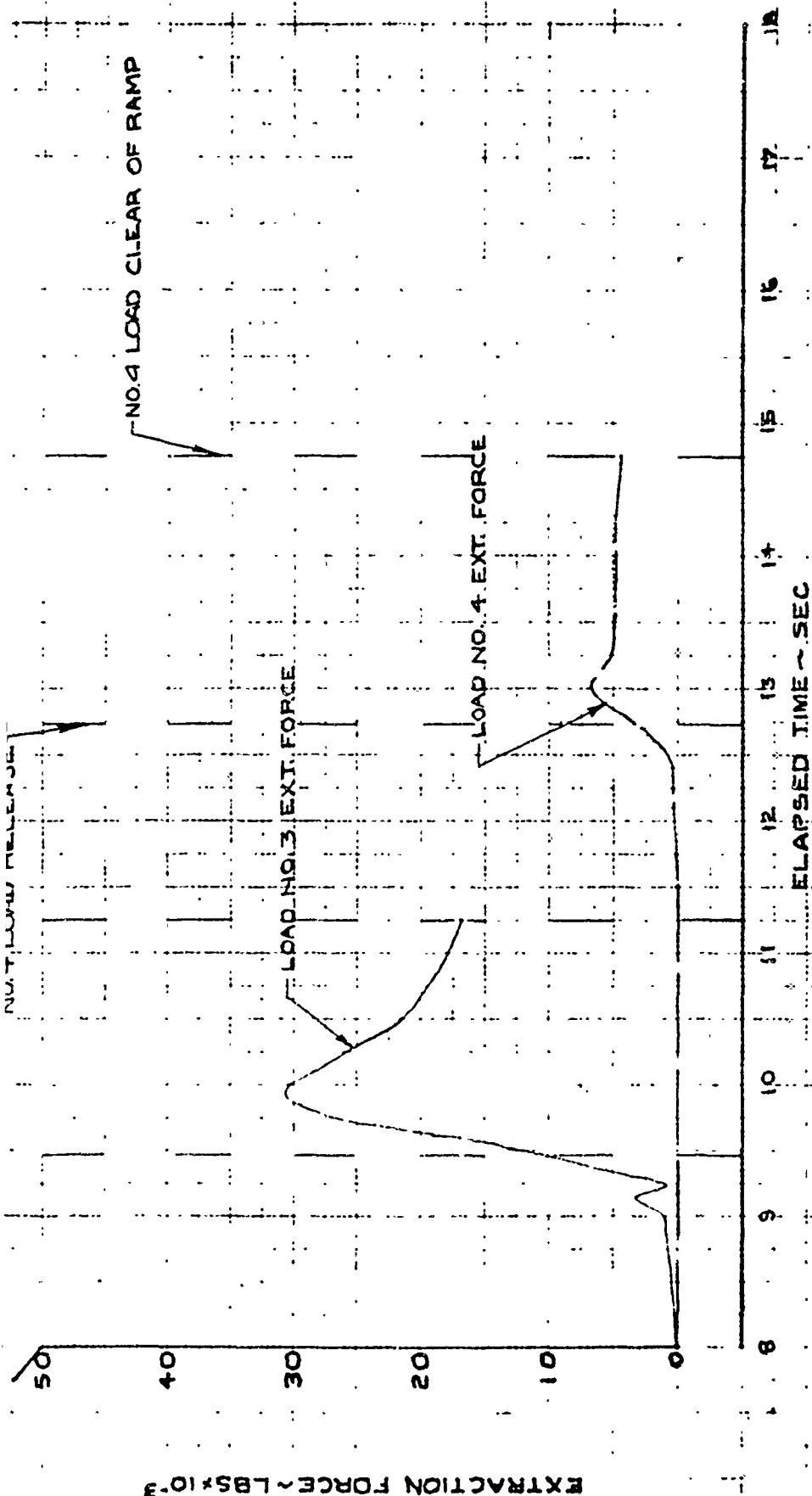


FIGURE F-8H

6008
ADS 160 H

RAMP ACTUATOR LOAD

LBS. X 10⁻³

R.H. ——— L.H.

TENSION

4

2

0

-2

-4

TENSION

ADS LINK AXIAL LOAD

LBS X 10⁻³

R.H. ——— L.H.

30

20

10

0

L.H. SPIDER ARM

R.H. SPIDER ARM

VERTICAL LOAD

LBS. X 10⁻³

R.H. ——— L.H.

PULL DOWN

15

10

5

0

L.H. VERT. LOAD

R.H. VERT. LOAD

PULL RIGHT

2.0

1.0

0

6008

ADS-1601

DTM
9-9-65

ER 5473
C-141A
F-72

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF 63-8077

LAC 6008

TEST DATE: 9-8-65

FLIGHT 178

DROP NO. 13

SHEET 9 OF 14

CARGO WTS. ① 10,465 LBS.
② 35,025 LBS.

NOTE:
SEE FIGURE 8 AS SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

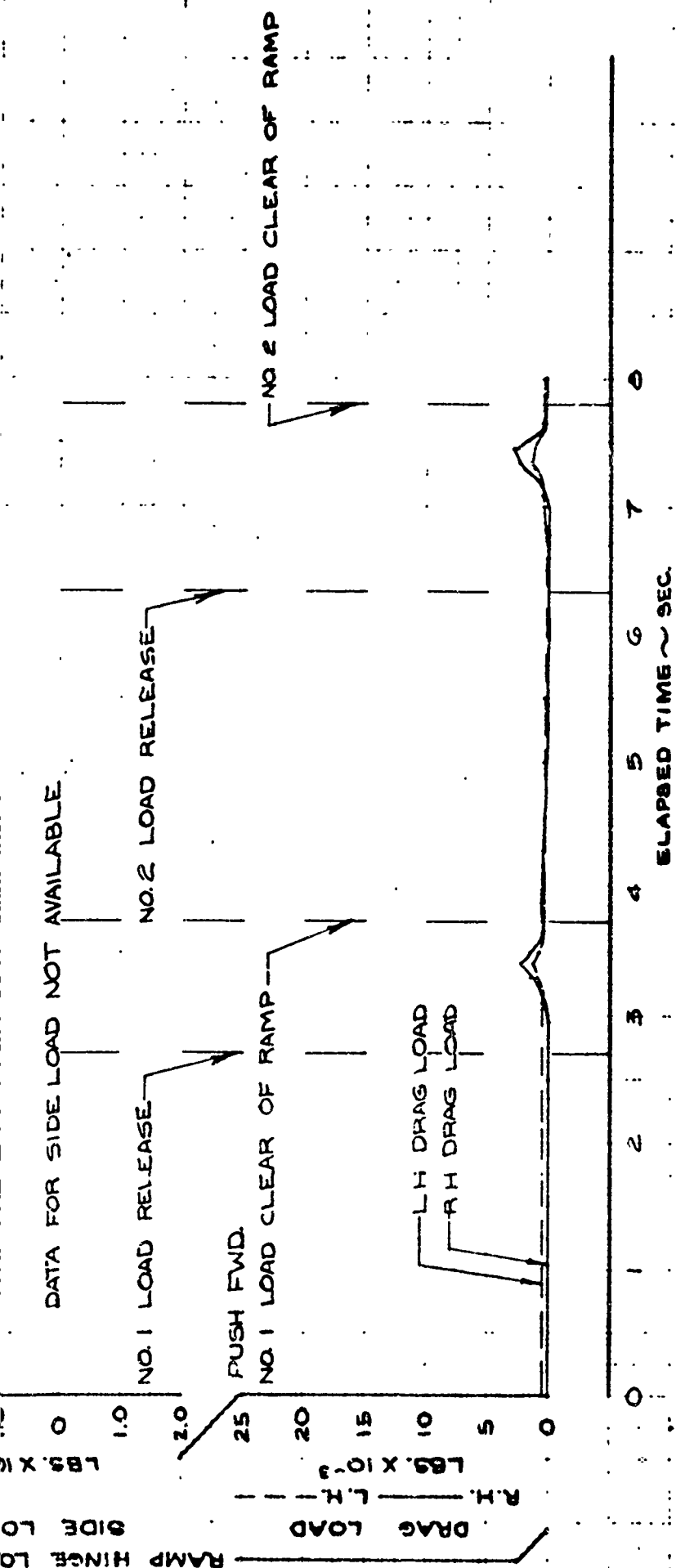
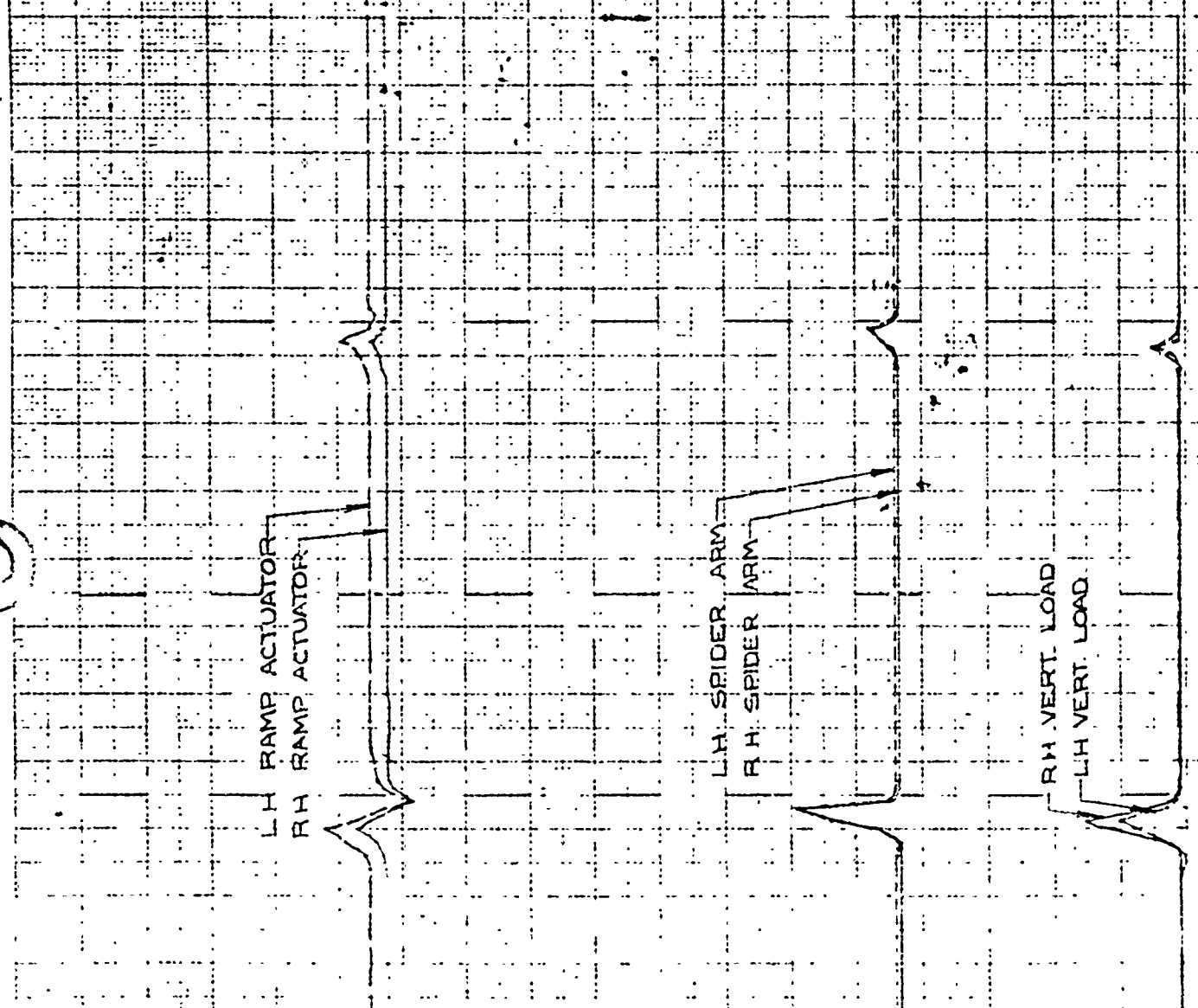
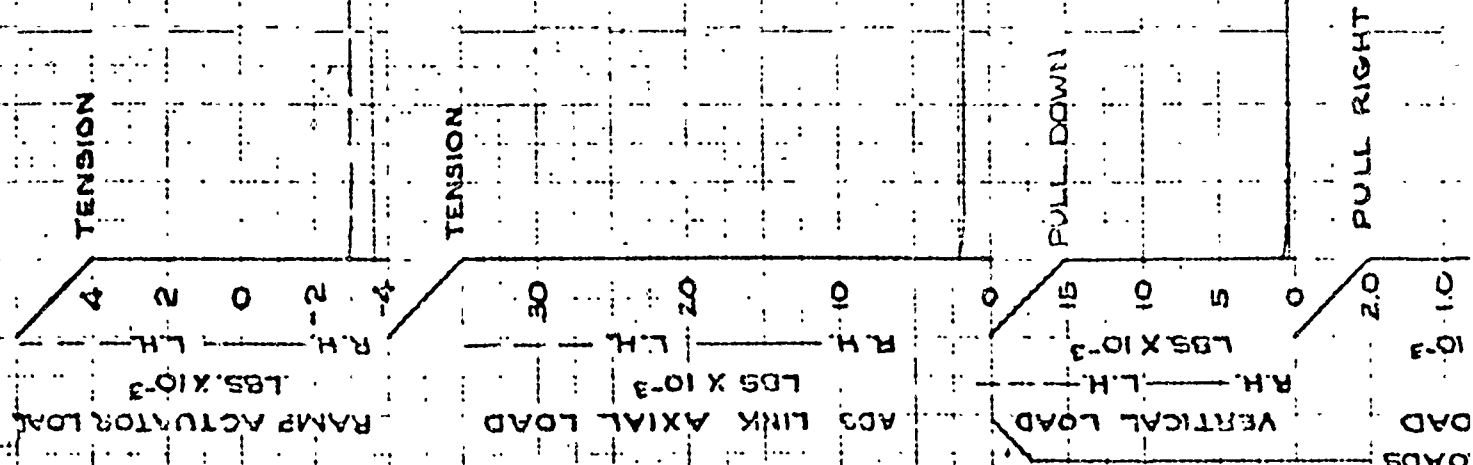


FIGURE F-81

6008
ADS-1601



08
A 5-160J

PREPARED BY **DTM**
 DATE **9-9-65**
 CHECKED BY **JWR**

LOCKHEED CORP. A COMPANY
 A DIVISION OF LOCKHEED CORP.

REPORT NO **ER 5473**
 MODEL **C-141A**
 PAGE **F-73**

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL **C-141A**

AF 63-8077

LAC 6008

TEST DATE: **9-8-65**

FLIGHT **178**

DROP NO **43**

SHEET **0** OF **14**

CARGO WTS. **(3) 20,565 LBS**
(4) 5055 LBS

NOTE:
 SEE FIGURE **F-8B** SHEET **1** OF **14**
 FOR RUN CONDITIONS, CARGO
 DESCRIPTION, AND EXTRACTION
 CHUTE DESCRIPTION.

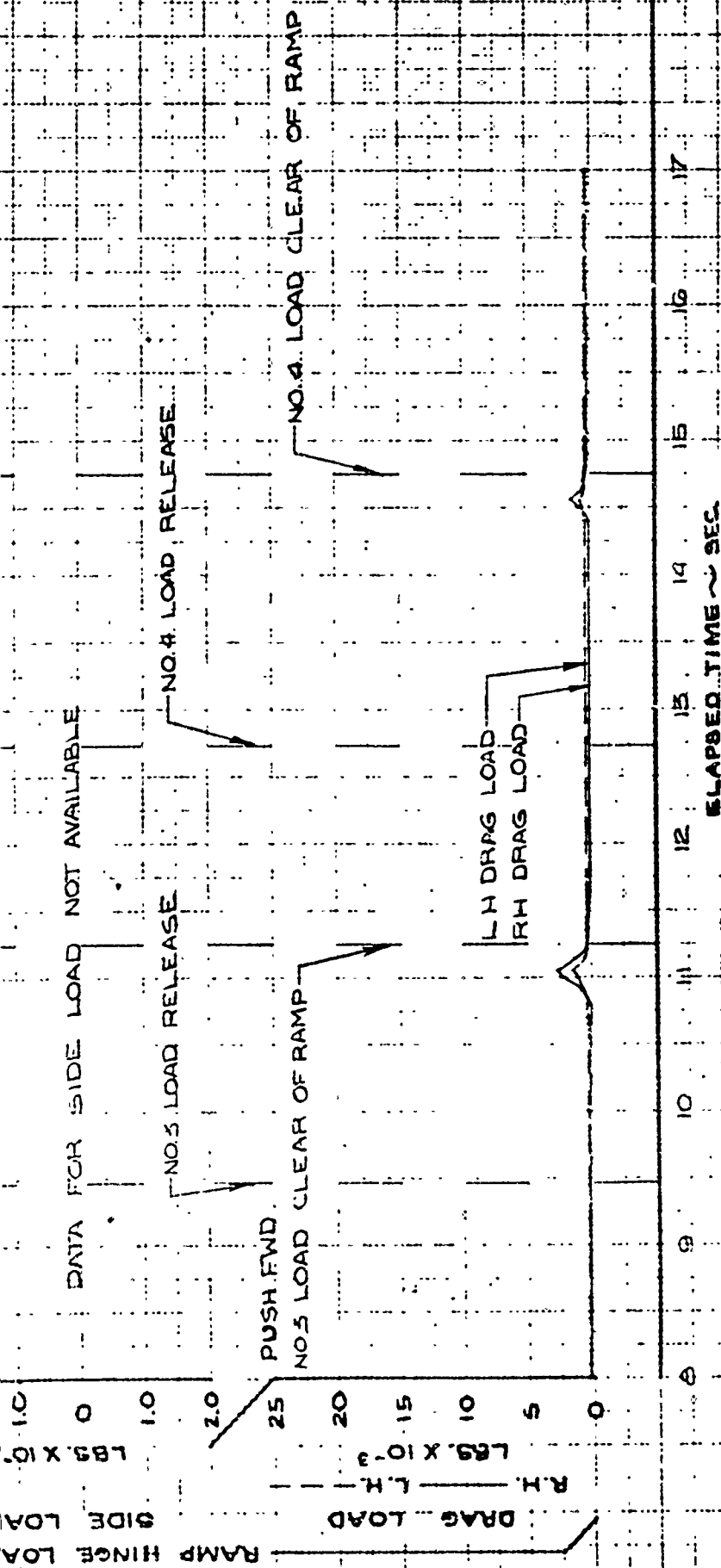
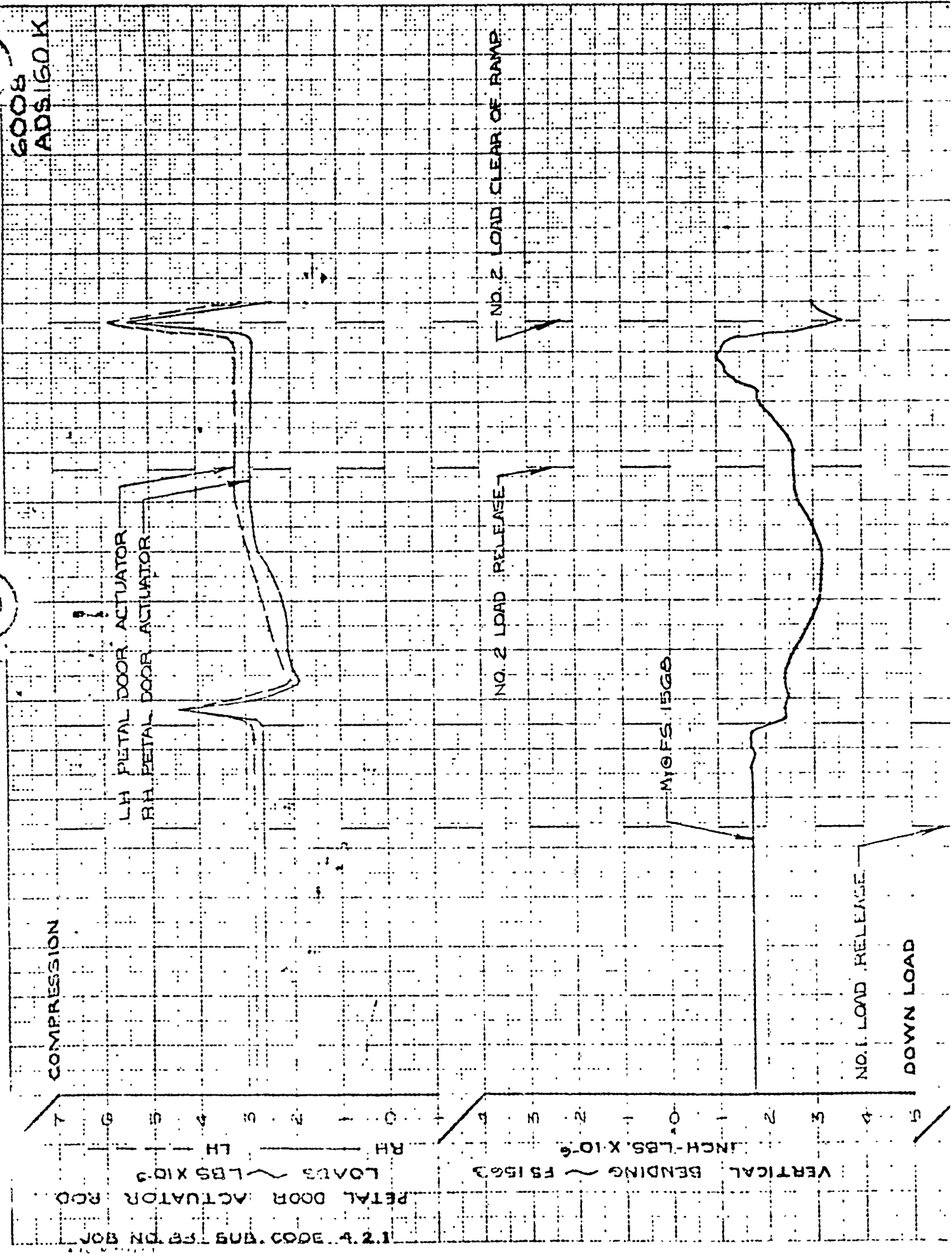


FIGURE F-8J

6008
 ADS-16CT



PREPARED BY DTM

DATE 9-9-65

CHECKED BY JUP

LOCKHEED GEORGIA COMPANY

A DIVISION OF LOCKHEED AIRCRAFT CORPORATION

REPORT NO

ER 5473

MODEL

C-141A

PAGE

F-74

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AFG3-8077

LAC 6008

TEST DATE 9-8-65

FLIGHT 178

DROP NO 43

SHEET 11 OF 14

CARGO WT. @ 10,465 LBS.

@ 35,025 LBS.

NOTE:

SEE FIGURE F-8 AS SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION

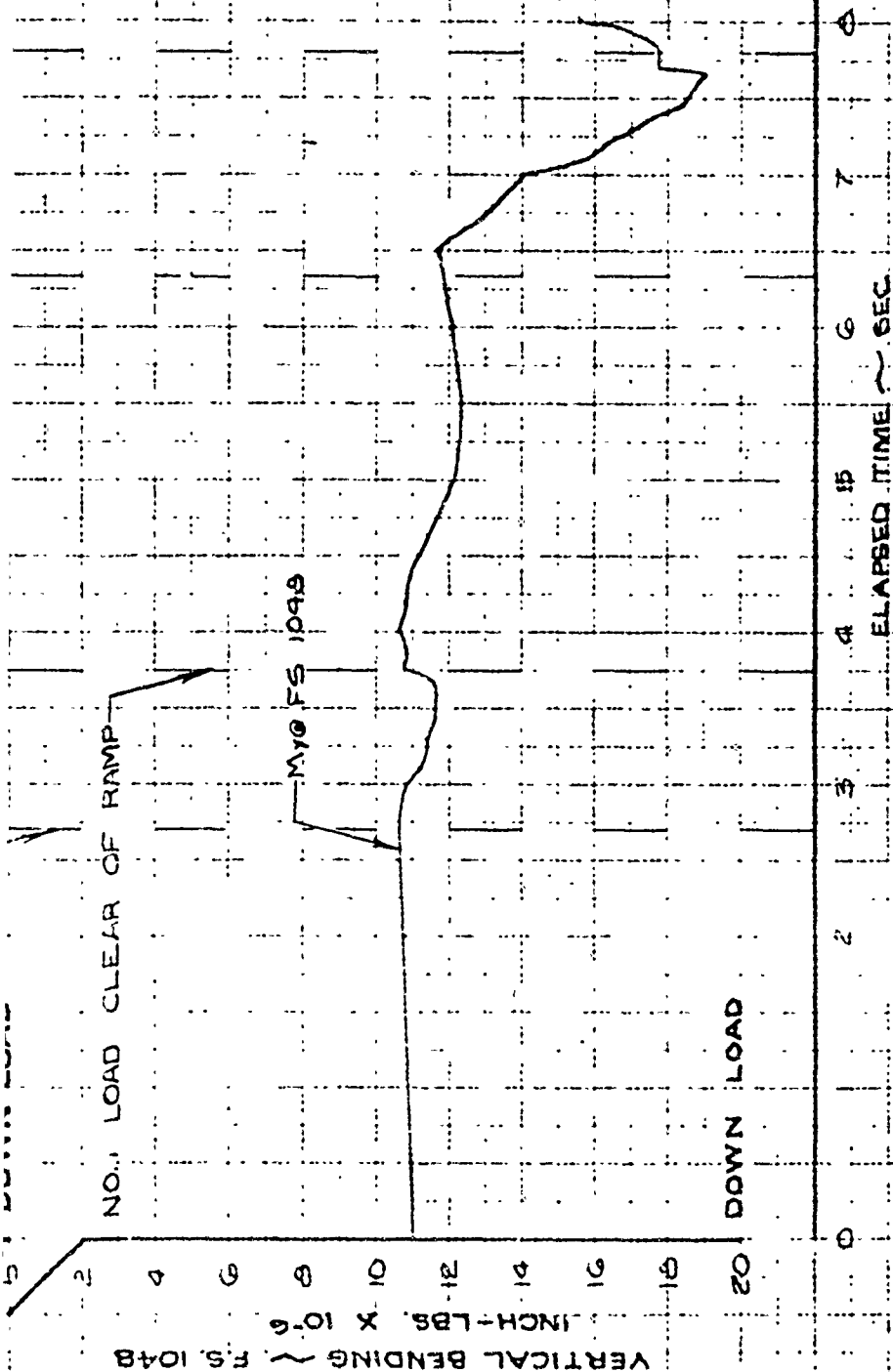


FIGURE F-8K

6008
ADS 160K

6008
ADS1601

COMPRESSION

LH PETAL DOOR ACTUATOR
RH PETAL DOOR ACTUATOR

PETAL DOOR ACTUATOR ROD
LOADS ~ LBS X 10⁻³
LH RH

VERTICAL BENDING ~ FS 1563

INCH-LBS X 10⁻⁶

MYO FS 1563

NO.4 LOAD RELEASE

DOWN LOAD

PREPARED BY DTM
DATE 9-9-65
CHECKED BY *dup*

LOCKHEED GEORGIA COMPANY
A DIVISION OF LOCKHEED AIR RESEARCH CORPORATION

REPORT NO. ER 5475
MODEL C-141A
PAGE F-75

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE 9-8-65

FLIGHT 178

DROP NO 43

SHEET 12 OF 14

CARGO WT. 20,565 LBS.
35,055 LBS.

NOTE:

SEE FIGURE 8B SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION AND EXTRACTION
CHUTE DESCRIPTION.

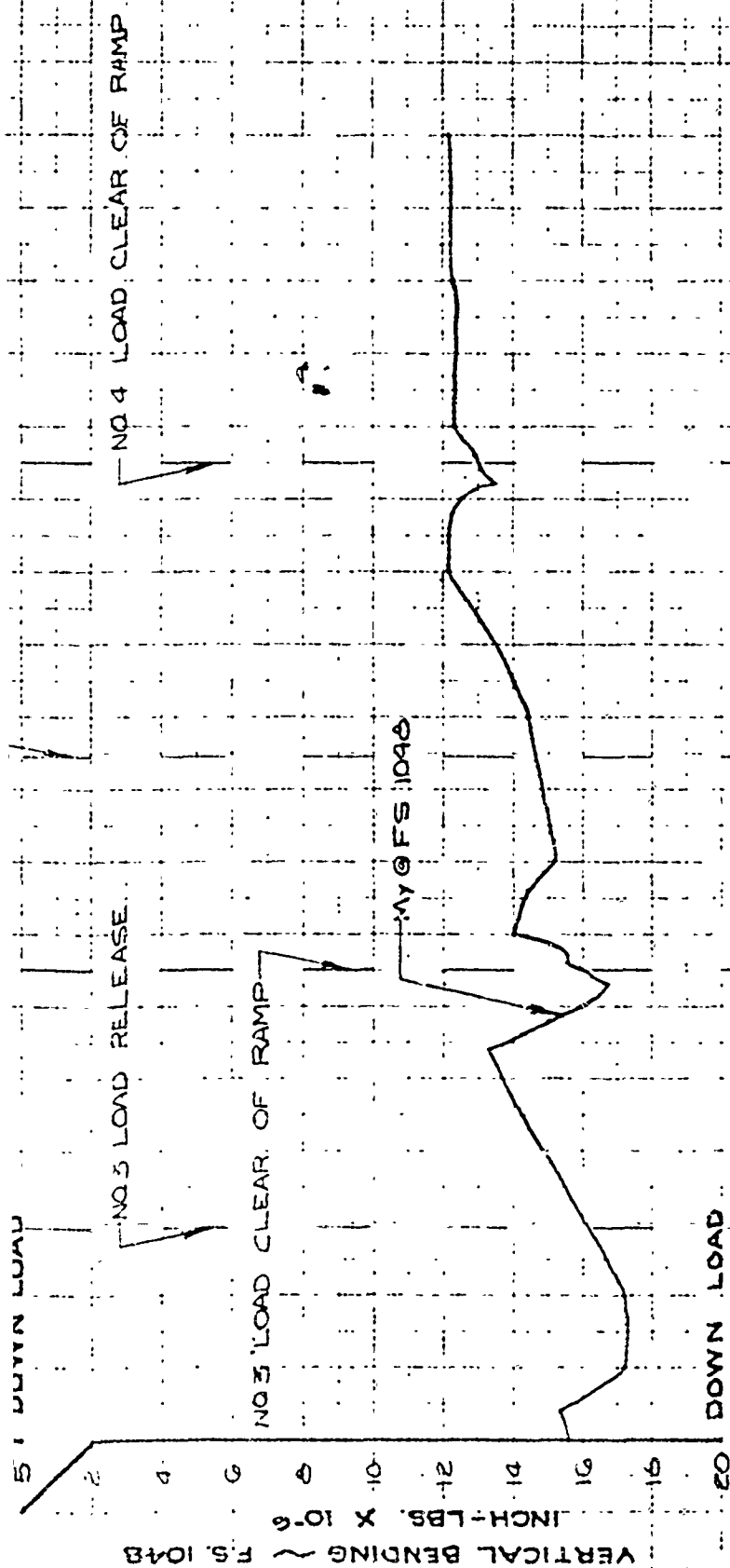
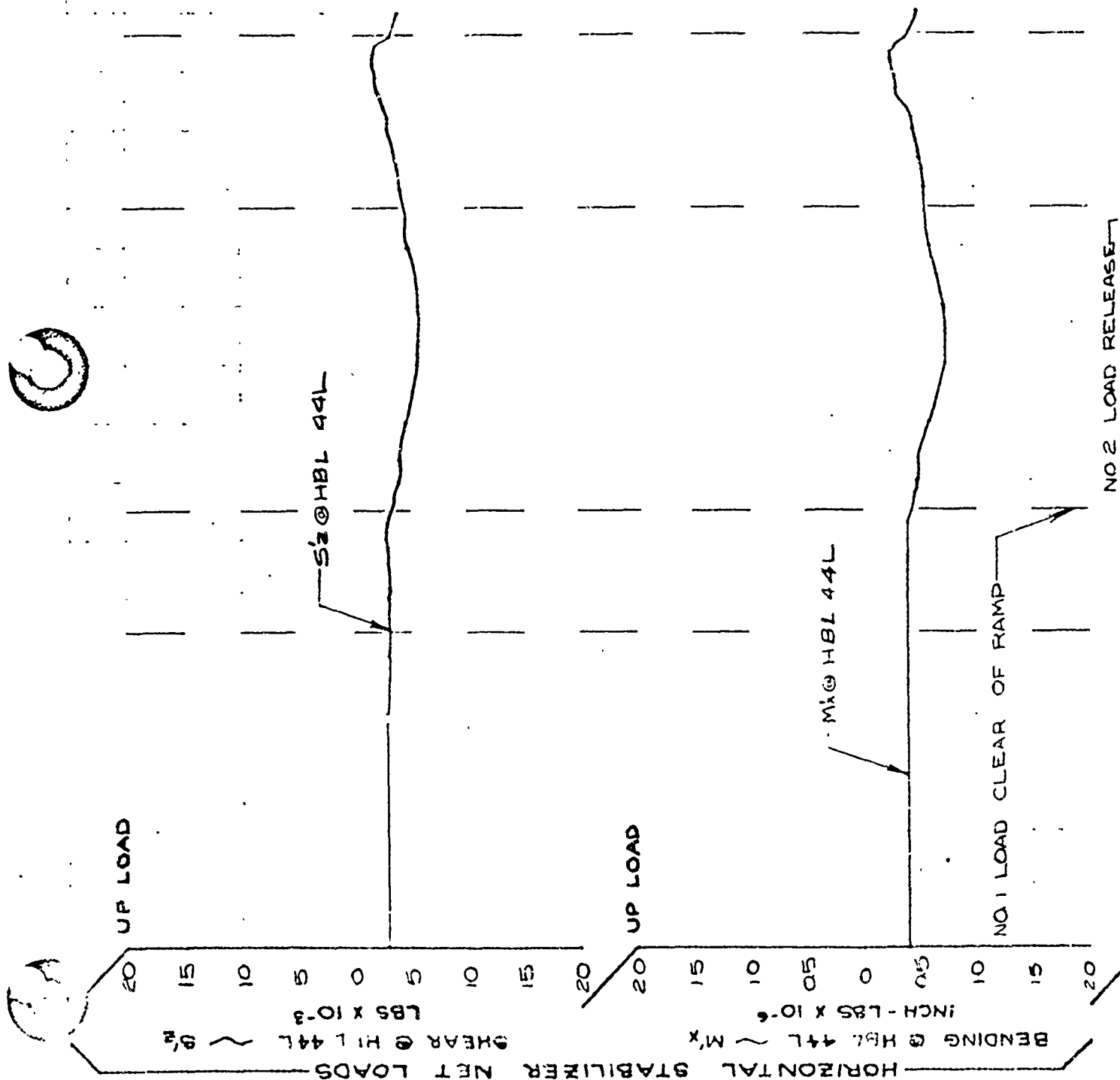


FIGURE F-8L



6008
ADS IGOM

DTM
8-9-65
JWP

ER 5473
C-141A
F-76

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 9-8-65

FLIGHT 178

DROP NO. 43

SHEET 13 OF 14

CARGO WTS ① 10,465 LBS
② 35,025 LBS

NOTE:
SEE FIGURE E-8 AS SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

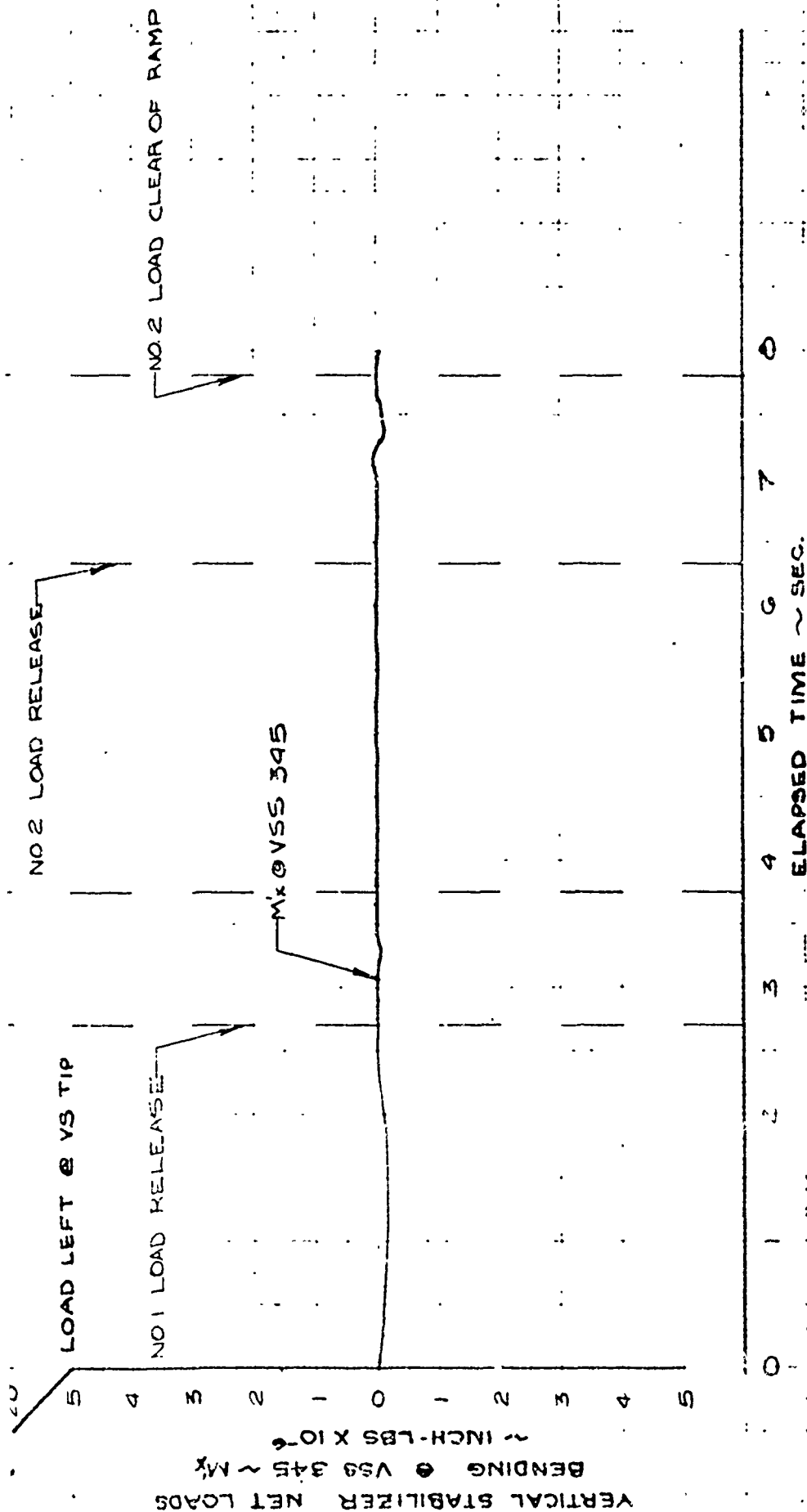


FIGURE E-8M

UP LOAD

20

15

10

5

0

5

10

15

20

HORIZONTAL STABILIZER NET LOADS
SHEAR @ HBL 44L ~ 9/2
LBS X 10⁻³

5 1/2 @ HBL 44L

UP LOAD

20

15

10

5

0

5

10

15

20

BENDING @ HBL 44L ~ M'
INCH - LBS X 10⁻⁶

M 1/2 @ HBL 44L

LOAD LEFT @ VS TIP

5

10

15

20

4

NO 3 LOAD RELEASE

NO 4 LOAD CLEAR OF RAMP

6008
AD9160M

DTM
9-8-65
Sub

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PROJECT

ER 5473
C-141A
P-77

TIME HISTORY OF AERIAL DELIVERY MANEUVER

MODEL C-141A

AF63-8077

LAC 6008

TEST DATE: 9-8-65

FLIGHT 178

DROP NO. 43

SHEET 14 OF 14

CARGO WT@ 20,565 LBS.
@ 5,055 LBS.

NOTE:
SEE FIGURE E-8N SHEET 1 OF 14
FOR RUN CONDITIONS, CARGO
DESCRIPTION, AND EXTRACTION
CHUTE DESCRIPTION.

ELAPSED TIME ~ SEC.
17
16
15
14
13
12
11
10
9
8

NO 4 LOAD CLEAR OF RAMP

NO 4 LOAD RELEASE

NO 3 LOAD CLEAR OF RAMP

MOVSS 345

NO 3 LOAD RELEASE

VERTICAL STABILIZER NET LOADS
BENDING @ VS9 345 ~ Mx
~ INCH-LBS X 10⁻⁶

FIGURE E-8N

6008
ADS 160N